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THIRTY-SIXTH ANNUAL REPORT
OF THE
HEALTH DEPARTMENT



OF THE
CITY OF BOSTON

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THIRTY-SIXTH ANNUAL REPORT

OF THE

HEALTH DEPARTMENT

OF THE

CITY OF BOSTON

FOR THE YEAR 1907



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ORGANIZATION OF THE HEALTH DEPARTMENT.

SAMUEL H. DURGIN, M.D., *Chairman,*

WILLIAM H. HAYES,

MICHAEL W. NORRIS.

CHARLES E. DAVIS, JR., *Secretary.*

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Boston, February 1, 1908.

HON. GEORGE A. HIBBARD,

Mayor of the City of Boston:

SIR, — The Board of Health respectfully presents the thirty-sixth annual report of the department, covering its operations for the financial year ending January 31, 1908, and the mortality statistics for the calendar year ending December 31, 1907. The general health of the city for the past year, so far as it may be judged by the total mortality and its classified causes, compares favorably with preceding years.

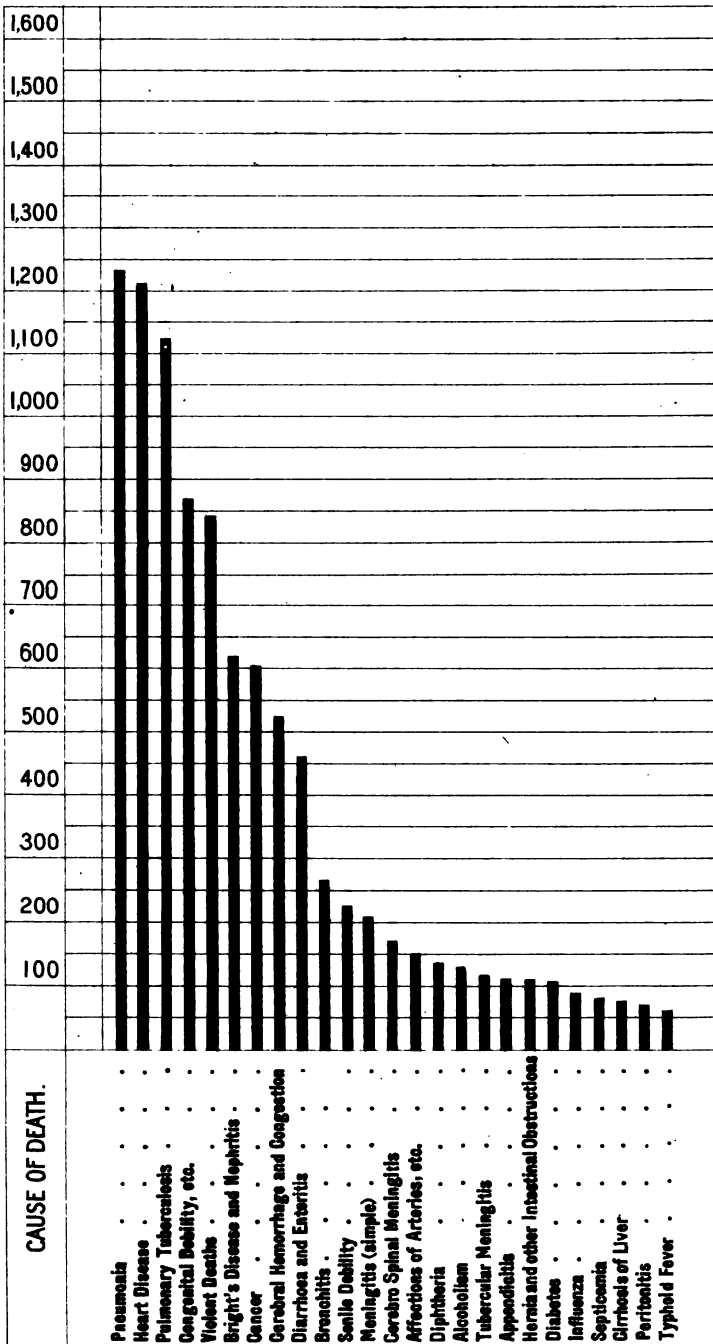
The total number of deaths for the year was 11,686, an increase over the previous year of 275 deaths. The estimated population, in the middle of the year, is 609,757. The death-rate for the year, as calculated on this population, is 19.16 per 1,000 inhabitants. This rate was greater by 0.26 than that of the previous year, but lower by 0.34 than the average of the previous ten years. There were 2,096 deaths from infectious diseases, a decrease of 23 deaths. There were 8 less deaths from diphtheria and croup than in 1906, and an increase in the number of cases. The percentage of deaths to the number of cases of diphtheria reported was 6.09, as against 7.00 per cent. the preceding year. There were 49 deaths from scarlatina, 10 more deaths than in the preceding year, and 42 deaths less than the average for the ten previous years. Typhoid fever caused 64 deaths during the year, 58 less deaths than the preceding year. Eighteen of the deaths from this cause occurred during the months of

August, September and October, and 37 of the whole number died between the ages of twenty and forty years.

There were 29 deaths from measles during the year. The number of deaths of children under five years of age was 3,160, compared with 3,439 for the previous year, showing a decrease of 279 deaths. The respiratory diseases caused 22 per cent. of the mortality for the past year.

CHART NO. 1.

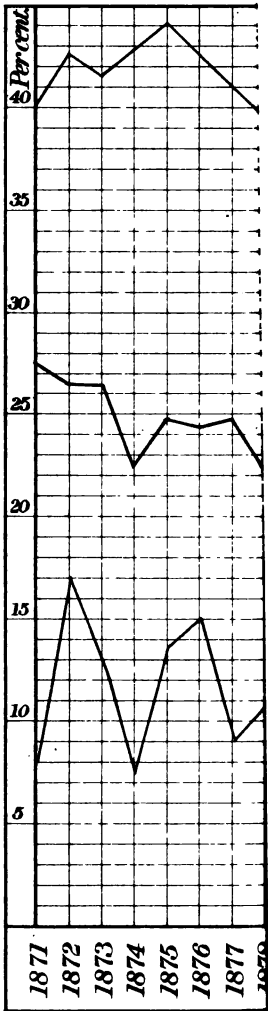
Comparative View of Twenty-five of the Principal Causes of Death during the Year 1907.



■ Deaths from Infectious Diseases.

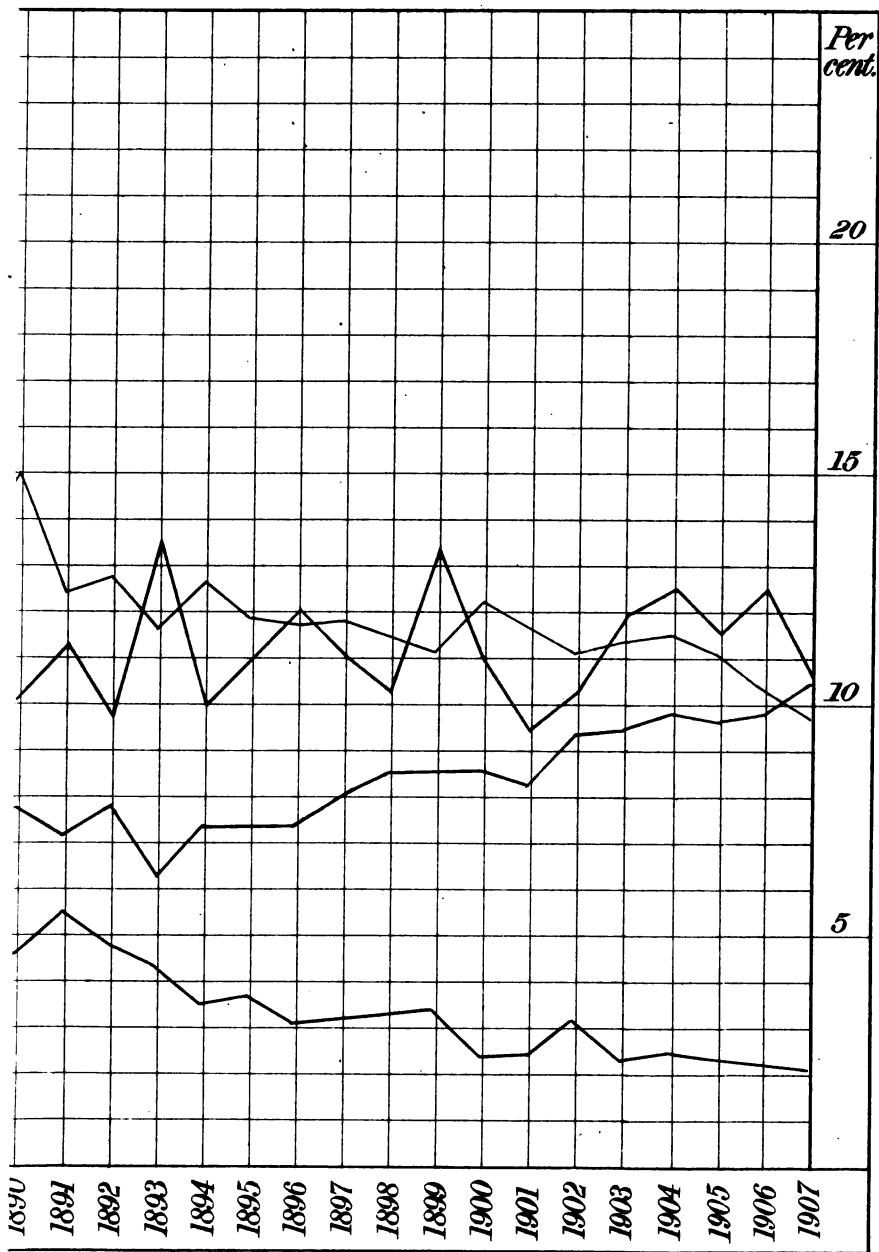
□ Deaths from other Diseases.

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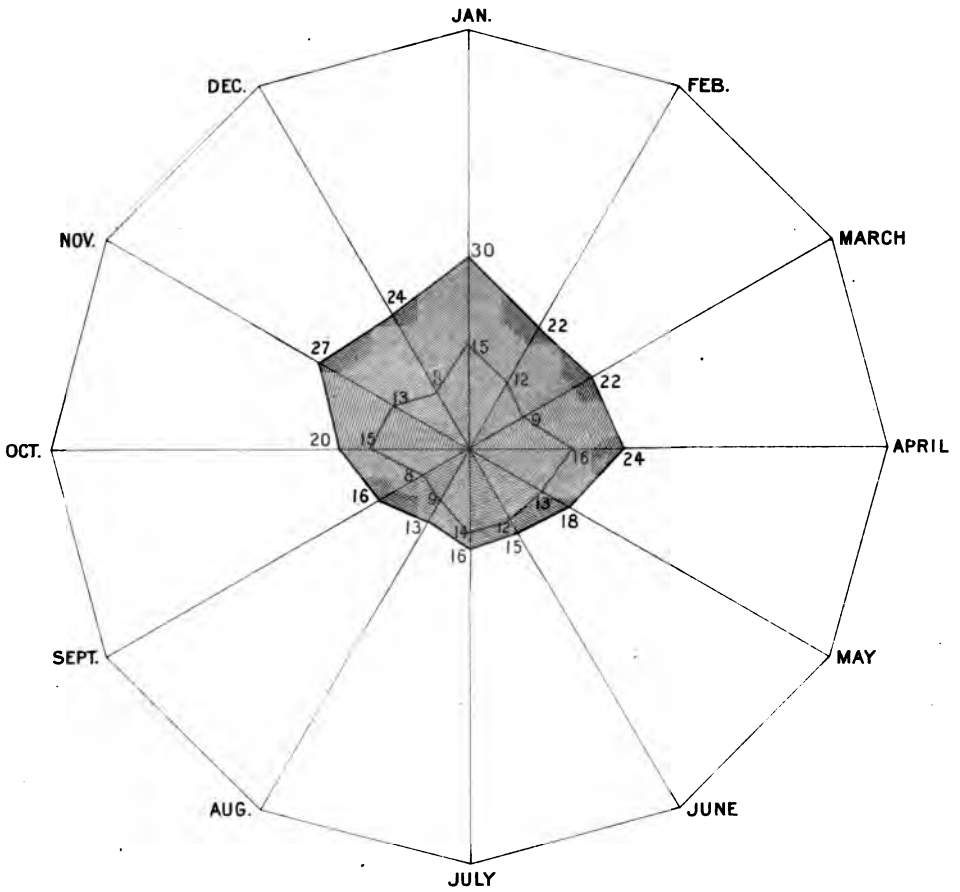
FOR FIFTY-SEVEN YEARS.



BRONCHITIS

CHART NO. 4.

DIPHTHERIA.



———— Average deaths per month for ten years, 1898-1907.

———— Deaths per month for the year 1907.

Table I. — Total of Deaths, Still-births and Deaths from Infectious Diseases for Thirty-seven Years.

YEARS.	Total Deaths, Exclusive of Still-births.	Still-births.	Rates of Still- births per 1,000 Inhabi- tants.	Diphtheria and Croup.	Scarlet Fever.	Typhoid Fever.	Cerebro-spinal Meningitis.	Whooping Cough.	Measles.	Smallpox.	Cholera Infantum.	Pyæmia and Septicæmia.	Erysipelas.	Intermittent Fever.	Dysentery.
1871....	5,888	543	1.88	128	111	176	3	30	9	23	526	....	59	....	56
1872....	8,090	560	1.91	94	258	229	60	52	60	738	742	....	99	....	56
1873....	7,869	515	1.76	119	474	243	216	33	16	302	616	....	92	1	57
1874....	7,812	642	2.19	121	269	202	35	108	41	2	679	20	51	3	56
1875....	9,060	541	1.28	631	534	227	41	41	65	1	684	22	69	....	97
1876....	8,253	485	1.41	720	458	145	13	59	2	2	542	36	45	....	96
1877....	7,316	471	1.37	471	104	156	24	88	2	4	563	18	30	4	166
1878....	7,636	441	1.28	569	68	120	19	88	145	....	395	14	43	2	216
1879....	7,398	453	1.24	545	149	119	15	112	2	....	383	29	46	4	101
1880....	8,531	443	1.22	774	33	154	8	94	49	1	518	18	24	....	121
1881....	9,016	513	1.29	802	35	207	16	77	108	6	444	23	42	3	96
1882....	8,995	518	1.26	575	75	212	24	92	25	8	506	33	40	2	83
1883....	9,740	504	1.17	608	211	198	23	31	152	1	543	42	42	1	88
1884....	9,622	503	1.17	487	209	216	26	181	13	1	517	40	47	1	61
1885....	9,618	520	1.30	450	156	152	19	26	84	2	461	32	40	3	62
1886....	9,268	543	1.35	423	81	135	14	37	36	....	444	43	39	....	61
1887....	10,073	534	1.33	410	195	183	16	82	119	....	492	37	34	....	59
1888....	10,179	552	1.33	589	65	170	19	74	27	2	440	27	41	1	48
1889....	10,259	598	1.42	683	23	186	21	96	48	2	450	26	24	....	76
1890....	10,181	627	1.39	462	42	155	17	39	19	....	498	31	36	...	30
1891....	10,571	614	1.33	285	64	154	21	39	21	....	597	44	39	2	48
1892....	11,236	633	1.34	481	262	137	12	45	19	....	563	37	37	....	30
1893....	11,710	605	1.24	546	248	148	15	40	27	....	499	56	56	6	39
1894....	11,520	700	1.39	878	192	141	18	111	8	22	569	53	32	4	38
1895....	11,329	607	1.21	654	114	163	15	47	19	....	500	67	34	5	43
1896....	11,634	648	1.25	572	12	162	21	67	27	....	575	61	30	5	44
1897....	11,154	614	1.16	456	136	173	185	39	21	....	400	73	34	1	18
1898....	10,886	613	1.13	185	33	185	97	68	27	....	441	69	30	1	41
1899....	11,167	539	.97	304	74	165	88	76	33	5	280	73	42	1	31
1900....	11,678	573	1.02	537	181	143	66	99	89	....	299	100	53	6	26
1901....	11,300	576	1.01	353	210	142	54	65	103	74	210	98	51	1	28
1902....	10,983	623	1.08	225	87	139	62	132	66	190	186	89	65	8	36
1903....	10,632	633	1.09	214	65	119	47	108	50	13	180	66	34	....	22
1904....	10,757	663	1.13	206	39	135	37	29	89	....	206	77	62	2	20
1905....	11,007	670	1.13	132	44	117	142	29	54	1	182	61	47	2	15
1906....	11,411	658	1.09	152	39	122	83	112	61	....	124	73	44	1	26
1907....	11,686	732	1.20	144	49	64	169	43	29	....	130	87	45	2	20

Table II. — Total number of Deaths under One Year; under Five Years, Five Years and Over, with Percentages to the Total Mortality for Thirty-six Years. Also Death Rates under One Year per Ten Thousand Inhabitants.

YEARS.	Total Deaths.	Five Years and over.	Under Five Years.	Under One Year.	PERCENTAGES.			Death Rate under One Year per 10,000 Inhabitants.
					Five Years and over.	Under Five Years.	Under One Year.	
1872.....	8,090	4,676	3,414	2,157	57.79	42.21	26.66	81.16
1873.....	7,869	4,580	3,289	2,066	58.20	41.80	26.25	64.32
1874.....	7,812	4,454	3,358	2,202	57.01	42.99	22.19	66.45
1875.....	9,060	5,088	3,972	2,263	56.16	43.84	24.98	66.18
1876.....	8,253	4,722	3,531	2,036	57.22	42.78	24.67	58.84
1877.....	7,316	4,334	2,982	1,817	59.24	40.76	24.84	51.60
1878.....	7,636	4,630	3,006	1,747	60.63	30.87	22.88	49.30
1879.....	7,398	4,593	2,805	1,690	62.08	37.92	22.84	47.13
1880.....	8,531	5,182	3,349	2,014	60.74	39.26	23.60	55.50
1881.....	9,016	5,702	3,314	2,005	63.24	36.76	22.24	54.46
1882.....	8,995	5,844	3,151	1,945	64.97	35.03	21.62	52.05
1883.....	9,740	6,113	3,672	2,183	62.76	37.24	22.41	57.58
1884.....	9,622	6,052	3,570	2,235	62.90	37.10	23.23	58.09
1885.....	9,618	6,152	3,466	2,156	63.97	36.03	22.42	55.23
1886.....	9,268	6,082	3,186	2,110	55.63	34.37	22.77	52.57
1887.....	10,073	6,411	3,662	2,312	63.55	36.35	22.95	56.02
1888.....	10,197	6,598	3,599	2,281	64.71	35.29	22.37	53.76
1889.....	10,259	6,626	3,633	2,360	64.59	35.41	23.00	54.10
1890.....	10,181	6,832	3,349	2,271	67.11	32.89	22.30	51.08
1891.....	10,571	6,963	3,608	2,552	65.87	34.13	24.14	55.75
1892.....	11,236	7,501	3,735	2,466	66.76	33.24	21.95	52.78
1893.....	11,710	7,723	3,987	2,531	65.96	34.04	21.61	53.07
1894.....	11,520	7,412	4,108	2,552	64.34	35.66	22.15	52.42
1895.....	11,329	7,394	3,935	2,580	65.27	34.73	22.77	51.45
1896.....	11,634	7,579	4,055	2,670	65.15	34.85	22.95	51.71
1897.....	11,154	7,446	3,708	2,462	66.76	33.24	22.07	46.55
1898.....	10,886	7,309	3,577	2,572	67.14	32.86	23.63	47.47
1899.....	11,167	7,576	3,591	2,404	67.84	32.16	21.53	43.41
1900.....	11,678	7,926	3,752	2,410	67.87	32.13	20.64	42.96
1901.....	11,300	7,831	3,469	2,287	69.30	30.70	20.24	40.29
1902.....	10,983	7,616	3,367	2,257	69.34	30.66	20.55	39.29
1903.....	10,632	7,553	3,079	2,173	71.04	28.96	20.44	37.38
1904.....	10,757	7,652	3,105	2,207	71.13	28.87	20.52	37.51
1905.....	11,007	7,983	3,024	2,186	72.53	27.47	19.86	36.72
1906.....	11,411	7,972	3,439	2,468	69.86	30.14	21.63	40.96
1907.....	11,686	8,526	3,160	2,350	72.96	27.04	20.11	38.54

Table III. — Deaths during the Year 1907, by Sex, Condition, Color, Nativity, Parentage and Season.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Total number of deaths.....	1,132	922	1,108	986	1,005	849	788	1,040	883	941	854	1,178	11,686
<i>Sex:</i>													
Males.....	590	472	584	525	531	477	446	564	473	502	432	591	6,187
Females.....	542	450	524	461	474	372	342	476	410	439	422	587	5,499
<i>Condition:</i>													
Single.....	469	390	507	453	488	442	433	637	509	466	372	498	5,664
Married.....	403	327	360	322	323	259	217	252	252	286	274	380	3,655
Widowed.....	225	184	203	190	169	130	112	129	102	160	181	269	2,054
Divorced.....	5	4	5	1	1	3	3	4	7	4	7	7	48
Unknown.....	30	17	33	20	24	18	23	18	13	25	20	24	265
<i>Color:</i>													
White.....	1,102	890	1,078	969	965	833	766	1,012	862	921	834	1,161	11,393
Black (Negro or Mixed).....	28	31	30	17	39	16	21	26	19	18	20	17	282
Indian.....									1				1
Chinese.....	2	1			1		1	2	1	2			10
Japanese.....													
<i>Nativity:</i>													
United States....	667	537	667	575	629	523	521	709	583	568	525	700	7,204
Ireland.....	224	174	201	196	150	152	112	148	128	171	154	209	2,019
England.....	28	24	26	26	19	17	15	16	17	19	23	30	260
Scotland.....	3	9	9	8	13	3	5	11	5	6	3	14	89
Germany.....	20	14	19	13	17	9	10	11	14	16	19	34	196
British Provinces.....	71	69	83	78	75	56	52	58	57	69	64	83	815
Italy.....	24	19	17	21	29	24	16	21	29	10	13	27	250
Russia.....	27	20	22	25	19	16	14	20	14	14	6	29	226
Sweden.....	7	5	7	6	5	9	3	2	4	6	6	7	67
Other countries.....	30	25	23	14	21	20	12	17	13	24	13	16	228
Unknown.....	31	26	34	24	28	20	28	27	19	38	28	29	332
<i>Parentage:</i>													
American.....	275	184	236	203	232	175	175	231	186	214	208	252	2,571
Irish.....	359	260	346	299	281	246	219	283	236	268	236	340	3,373
English.....	26	19	21	19	21	16	14	13	14	16	25	25	229
Scotch.....	3	13	17	9	20	4	7	13	6	7	7	16	122
German.....	25	21	26	14	20	14	16	16	20	18	25	38	253
British Provinces.....	57	48	70	52	58	45	56	60	58	64	50	69	687
Italian.....	43	46	48	51	71	79	74	75	69	42	50	71	719
Russian.....	44	41	44	37	33	42	35	62	37	36	22	46	479
Swedish.....	9	6	11	9	6	10	4	2	8	9	6	6	86
Other countries.....	64	68	57	71	69	48	44	61	47	57	42	50	678
Mixed.....	67	68	79	67	77	56	37	96	75	62	51	77	812
One parent unknown.....	56	49	51	72	35	38	29	29	53	51	43	77	583
Unknown.....	104	99	102	83	82	76	78	99	74	97	89	111	1,094

Table IV. — Monthly Deaths Reduced to a Standard of 100.

MONTHS. 1907.	Total Deaths in Month.	Monthly Deaths Reduced to a Standard of 100.	Deaths per Day.
January.....	1,132	114.0	36.5
February.....	922	102.9	32.9
March.....	1,108	111.7	35.7
April.....	986	102.7	32.9
May.....	1,005	101.3	32.4
June.....	849	88.4	28.3
July.....	788	79.4	25.4
August.....	1,040	104.8	33.5
September.....	883	91.9	29.4
October.....	941	94.9	30.3
November.....	854	88.9	28.4
December.....	1,178	118.7	38.0
Total.....	11,686	100.0	32.0

Table V. — Deaths from Principal Infectious Diseases.

	Total Deaths from each Cause.	Percentage of each Cause to Total Mortality.	Deaths per 1,000 Inhabitants.	Total Deaths per Sex.		Total Deaths per sex under Five Years.		Total Deaths under Five Years.	Percentage of each Cause under Five Years to Total Mortality.
				M.	F.	M.	F.		
Smallpox.....									
Measles.....	29	.248	.047	17	12	15	11	26	.222
Scarlatina.....	49	.419	.080	25	24	17	15	32	.274
Diphtheria and Croup...	144	1.232	.236	68	76	38	50	88	.753
Whooping-cough.....	43	.368	.070	25	18	24	17	41	.350
Typhoid Fever.....	64	.548	.105	38	26	...	2	2	.017
Erysipelas.....	46	.394	.075	26	20	13	11	24	.205
Puerperal Septicæmia...	25	.214	.041	.....	25	.....	.....	.....	.....
Dysentery.....	20	.171	.033	8	12	3	2	5	.043
Cholera Morbus.....	4	.034	.006	1	3	1	.....	1	.008
Phthisis Laryngeal, Pul- monary and General Tuberculosis.....	1,138	9.738	1.866	645	493	25	19	44	.376
Influenza.....	93	.796	.152	34	59	2	3	5	.043
Syphilis, Congenital....	46	.394	.075	25	21	25	21	46	.394
Syphilis, Tertiary.....	18	.154	.029	11	7	.....	.....	.....	.....
Pyæmia and Septicæmia.	93	.796	.152	56	37	9	15	24	.205

Table VI.—Yearly Percentages of Principal Infectious Diseases from 1879 to 1907, inclusive, to Total Mortality.

	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.
Smallpox.....	.....	.011	.066	.088	.010	.010	.020	.....	.....	.019	.019	.....	.....	.....	.084
Measles.....	.027	.574	1.197	.277	1.560	.135	.873	.388	1.181	.264	.468	.186	.198	.169	.280
Scarlatina.....	2.014	.386	.388	.833	2.166	2.172	1.621	.873	1.935	.637	.224	.412	.605	2.331	2.118
Diphtheria.....	5.285	6.862	6.665	5.061	4.568	3.585	3.472	3.519	3.137	4.609	5.498	3.938	2.194	3.684	4.064
Croup.....	2.081	2.180	2.229	1.300	1.673	1.475	1.299	1.014	.933	1.167	1.160	.599	.501	.506	.597
Whooping-cough.....	1.513	1.101	.854	1.022	.318	1.881	.270	.399	.814	.725	.936	.383	.368	.400	.341
Typhoid fever.....	1.608	1.804	2.295	2.356	2.032	2.245	1.580	1.456	1.816	1.667	1.813	1.522	1.456	1.219	1.263
Erysipelas.....	.527	.281	.465	.444	.431	.448	.415	.420	.337	.402	.234	.353	.368	.329	.478
Puerperal fever.....	.851	.726	.754	.833	.728	.467	.267	.183	.228	.176	.117	.265	.170	.249	.239
Dysentery.....	1.365	1.488	1.064	.922	.903	.663	.644	.658	.585	.470	.741	.294	.454	.266	.333
Cholera morbus.....	.351	.445	.177	.511	.246	.509	.319	.302	.258	.264	.214	.225	.189	.204	.119
Cholera infantum.....	5.117	6.071	4.924	5.625	5.574	5.372	4.793	4.790	4.864	4.314	4.386	4.891	5.647	5.010	4.261
Cerebro-spinal fever.....	.202	.105	.177	.266	.236	.270	.197	.151	.158	.186	.205	.166	.198	.105	.128
Intermittent fever.....	.013	.058	.033	.023	.010	.010	.031	.....	.....	.009	.....	.....	.018	.....	.051
Remittent fever.....	.081	.082	.044	.011	.010	.....	.020	.053	.....	.109	.....	.....	.009	.008	.017
Pyæmia.....	.175	.048	.155	.233	.154	.176	.114	.183	.138	.098	.078	.127	.141	.080	.111
Syphilis, congenital.....	.243	.128	.221	.133	.184	.280	.218	.215	.268	.254	.214	.392	.198	.106	.153
Syphilis tertiary.....	.094	.093	.088	.100	.133	.051	.503	.075	.079	.039	.097	.029	.047	.026	.068
Septicæmia.....	.175	.187	.122	.133	.277	.270	.322	.280	.228	.166	.175	.176	.274	.249	.367
Yellow fever.....	.....	.....	.....	.....	.....	.010	.010	.....	.....	.....	.....	.....	.....	.....	.....

Table VI. — Yearly Percentage of Principal Infectious Diseases from 1879 to 1907. — *Concluded.*

	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.
Smallpox.....	.190	.....	.....	.....	.....	.045	.....	.655	1.730	.122	.....	.009	.....	.....
Measles.....	.069	.167	.234	.188	.248	.595	.753	.911	.601	.470	.827	.490	.535	.248
Scarlatina.....	1.666	1.006	1.040	1.219	.303	.662	1.549	1.858	.792	.611	.362	.400	.342	.419
Diphtheria.....	7.092	5.190	4.435	3.684	1.562	2.480	4.598	3.124	1.730	} 2.013	1.915	1.199	1.332	1.232
Croup.....	.529	.582	.481	.403	.138	.242	.....	.....	.319		.....	.....	.....	.....
Whooping-cough.....	.963	.414	.576	.349	.625	.680	.848	.575	1.202	1.016	.270	.263	.981	.368
Typhoid fever.....	1.223	1.438	1.392	1.551	1.699	1.477	1.224	1.257	1.265	1.119	1.225	1.063	1.069	.548
Erysipelas.....	.277	.300	.258	.287	.276	.376	.454	.451	.592	.320	.576	.427	.376	.385
Puerperal fever.....	.138	.123	.172	.117	.073	.098	.248	.274	.291	.216	.167	.236	.166	.214
Dysentery.....	.329	.379	.378	.161	.377	.277	.051	.248	.328	.207	.186	.136	.228	.171
Cholera morbus.....	.199	.132	.249	.152	.138	.143	.128	.039	.073	.666	.074	.082	.053	.034
Cholera infantum.....	4.939	4.413	4.942	3.586	4.051	2.507	2.560	1.858	1.694	1.693	1.915	1.653	1.087	1.112
Cerebro-spinal fever.....	.156	.132	.180	1.659	.891	.788	.565	.478	.565	.442	.344	1.290	.727	1.446
Intermittent fever.....	.034	.044	.043	.909	.009	.009	.051	.009	.173	.....	.019	.018	.009	.017
Remittent fever.....	.430	.008	.009	.....	.009	.....	.590	.....	.....	.....	.....	.....	.....	.....
Pyemia.....	.190	.044	.069	.054	.064	.107	.....	.....	.810	.620	.716	.....	.....	.....
Syphilis, congenital.....	.078	.229	.344	.197	.165	.197	.171	.194	.155	.188	.214	.245	.245	.394
Syphilis, tertiary.....	.52	.070	.051	.080	.083	.045	.085	.115	.091	.122	.121	.054	.149	.154
*Septicæmia.....	.....	.547	.456	.600	.569	.546	.856	.867	.810	.621	.716	.554	.640	.753
Yellow fever.....	.....	.....	.....	.009	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

* Pyemia included in 1905 and 1906.

Table VII. — Deaths from Ten of the Principal Causes.

	Total Deaths from each Cause.	Percentage of each Cause to Total Mortality.	Death per 1,000 Inhabitants.	Total Deaths by Sex.		Total Deaths by Sex under Five Years.		Total Deaths under Five Years.	Percentage of each Cause under Five Years to Total Mortality.
				M.	F.	M.	F.		
Pneumonia	1,233	10.551	2.022	659	574	135	91	226	1.934
Heart Disease	1,211	10.383	1.986	640	571	11	15	26	.222
Pulmonary Laryngeal and General Tuberculosis	1,138	9.738	1.866	645	493	25	19	44	.376
Congenital Debility, Scleremia, etc.	852	7.290	1.397	468	384	468	384	852	7.290
Violent Deaths	842	7.205	1.381	637	205	47	47	94	.804
Bright's Disease and Nephritis	627	5.365	1.028	337	290	14	12	26	.222
Cancer and other malignant Tumors, Diarrhoea, Enteritis, etc.	611	5.228	1.002	219	392	.....	6	6	.051
Cerebral Hemorrhage and Congestion	580	4.963	.951	286	294	266	240	506	4.330
Bronchitis	515	4.407	.845	239	276	8	5	13	.11
	261	2.233	.428	109	152	51	55	106	.907

Table VIII. — Total Deaths each Quarter of the last Five Years, with the Aggregate and Average Number from 1898 to 1902, inclusive.

	1903.	1904.	1905.	1906.	1907.	5 years, 1898-1902.	
						Aggregate.	Average.
First quarter	2,982	2,963	2,907	2,993	3,182	14,854	2,971
Second quarter	2,515	2,598	2,677	2,797	2,840	13,311	2,662
Third quarter	2,594	2,625	2,821	2,834	2,711	14,218	2,844
Fourth quarter	2,541	2,571	2,602	2,787	2,973	13,631	2,726
Total each year ..	10,632	10,757	11,007	11,411	11,686	56,014	11,203

Table IX. — Total Deaths and Percentages each Quarter for the Year 1907, with Aggregates and Percentages for the Ten Years Previous.

	1907.		1897-1906.	
	Deaths.	Per cent.	Deaths.	Per cent.
First quarter	3,162	27.06	29,721	26.78
Second quarter	2,840	24.30	26,700	24.06
Third quarter	2,711	23.20	27,925	25.16
Fourth quarter	2,973	25.44	26,629	24.00
Total	11,686	100.00	110,975	100.00

Table X.—The number and Percentages of Deaths in each Quarter of each Year during a Period of Forty-three Years, 1865-1907, inclusive.

YEARS.	FIRST QUARTER.		SECOND QUARTER.		THIRD QUARTER.		FOURTH QUARTER.		Rate Per 1,000 Inhabitants.
	Deaths.	Per cent.	Deaths.	Per cent.	Deaths.	Per cent.	Deaths.	Per cent.	
1865.....	1,115	24.55	1,068	23.52	1,353	29.80	1,005	22.13	23.61
1866.....	999	22.81	957	21.85	1,338	30.56	1,085	24.78	22.51
1867.....	1,071	24.22	950	21.49	1,191	26.94	1,209	27.35	22.38
1868.....	1,341	24.30	1,203	21.80	1,736	31.45	1,239	22.45	23.89
1869.....	1,374	24.88	1,297	23.48	1,562	28.28	1,290	23.36	23.54
1870.....	1,395	22.88	1,314	21.55	1,983	32.52	1,406	23.05	24.34
1871.....	1,411	23.97	1,299	22.06	1,842	31.28	1,336	22.69	22.82
1872.....	1,697	20.97	1,777	21.97	2,511	31.04	2,105	26.02	30.43
1873.....	2,115	26.88	1,726	21.93	2,278	28.95	1,780	22.24	28.75
1874.....	1,805	23.11	1,818	23.27	2,278	29.16	1,911	24.46	23.57
1875.....	2,190	24.17	2,011	22.20	2,680	29.58	2,179	24.05	26.50
1876.....	2,246	27.21	1,809	21.92	2,375	28.78	1,823	22.09	20.86
1877.....	1,723	23.55	1,613	22.05	2,317	31.67	1,663	22.73	20.89
1878.....	1,743	22.82	1,744	22.84	2,174	28.47	1,975	25.87	21.55
1879.....	1,947	26.32	1,615	21.83	1,959	26.48	1,877	25.37	20.63
1880.....	2,015	23.62	1,829	21.45	2,500	29.30	2,187	25.63	23.51
1881.....	2,332	25.86	2,021	22.42	2,466	27.35	2,197	24.38	24.48
1882.....	2,104	23.39	2,212	24.59	2,489	27.67	2,190	24.35	24.07
1883.....	2,268	23.28	2,409	24.74	2,757	28.31	2,306	23.67	25.69

1884	2,284	23.73	2,103	21.85	2,725	28.33	2,510	26.09	25.01
1885	2,510	26.10	2,484	25.82	2,592	26.95	2,032	21.13	24.64
1886	2,214	23.89	2,113	22.79	2,580	27.84	2,361	25.48	23.09
1887	2,362	23.45	2,281	22.65	2,912	28.90	2,518	25.00	21.41
1888	2,790	27.36	2,420	23.73	2,649	25.98	2,338	22.93	24.03
1889	2,437	23.75	2,543	24.78	2,854	27.82	2,425	23.64	23.52
1890	2,911	28.60	2,344	22.04	2,699	26.51	2,928	22.85	22.70
1891	2,442	23.10	2,540	24.03	2,835	26.82	2,754	26.05	23.09
1892	2,998	26.68	2,582	22.98	2,958	26.33	2,698	24.01	24.04
1893	2,960	25.85	2,847	24.31	3,013	25.74	2,881	24.60	24.55
1894	2,972	25.80	2,592	22.50	3,182	27.62	2,774	24.08	23.66
1895	2,995	26.44	2,574	22.72	3,027	26.72	2,733	24.12	22.60
1896	2,897	24.99	2,807	24.13	3,319	28.53	2,611	22.44	22.53
1897	3,022	27.09	2,802	25.12	2,833	25.40	2,497	22.39	21.08
1898	2,599	23.87	2,512	23.08	3,051	28.03	2,724	25.02	20.09
1899	2,987	26.75	2,632	23.57	2,800	25.07	2,748	24.61	20.12
1900	3,368	28.84	2,778	23.97	2,906	24.99	2,626	22.48	20.82
1901	3,032	26.83	2,744	24.29	2,814	24.90	2,710	23.98	19.91
1902	2,868	26.11	2,645	24.08	2,647	24.10	2,823	25.71	19.01
1903	2,982	28.05	2,515	23.65	2,594	24.40	2,541	23.90	18.29
1904	2,963	27.55	2,598	24.15	2,625	24.40	2,571	23.90	18.28
1905	2,907	26.41	2,677	24.32	2,821	25.63	2,602	23.64	18.49
1906	2,993	26.23	2,797	24.51	2,834	24.84	2,787	24.42	18.94
1907	3,162	27.06	2,840	24.30	2,711	23.20	2,973	25.44	19.16

¹ Population estimated in non-census years on Dr. Farr's formula.

Table XI. — Percentage of Children by Sex and under One, Two and Five Years for each Month during the Year 1907.

	JANUARY.			FEBRUARY.			MARCH.			APRIL.			MAY.			JUNE.		
	Under 1 yr.		1 yr. and under 2 yrs.	Under 1 yr.		1 yr. and under 2 yrs.	Under 1 yr.		1 yr. and under 2 yrs.	Under 1 yr.		1 yr. and under 2 yrs.	Under 1 yr.		1 yr. and under 2 yrs.	Under 1 yr.		1 yr. and under 2 yrs.
	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.
United States.....	30	18	1	18	15	1	3	3	5	29	20	5	4	2	4	23	14	6
Ireland.....	17	15	2	8	1	1	1	1	2	12	7	2	2	2	2	3	8	2
British Provinces.....	7	10	1	3	6	1	2	1	1	10	6	5	1	1	1	3	2	2
Italian.....	7	10	1	15	5	1	2	1	1	12	8	1	1	1	1	20	6	7
Russian.....	11	10	2	1	3	6	1	1	1	12	6	1	1	1	1	8	10	2
Other foreign.....	12	10	1	14	9	2	1	1	1	15	14	4	2	2	2	6	7	2
Mixed.....	8	6	1	12	8	1	2	1	1	16	19	2	1	1	1	10	8	1
One parent unknown.....	1	3	1	3	1	1	1	1	1	5	2	1	1	1	1	10	7	1
Unknown.....	96	81	9	81	57	8	14	19	20	103	77	19	16	14	17	85	66	25
Total.....	18	13	8	23	13	9	8	14	19	20	103	77	19	16	14	85	66	25
	JULY.			AUGUST.			SEPTEMBER.			OCTOBER.			NOVEMBER.			DECEMBER.		
	Under 1 yr.		1 yr. and under 2 yrs.	Under 1 yr.		1 yr. and under 2 yrs.	Under 1 yr.		1 yr. and under 2 yrs.	Under 1 yr.		1 yr. and under 2 yrs.	Under 1 yr.		1 yr. and under 2 yrs.	Under 1 yr.		1 yr. and under 2 yrs.
	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.
United States.....	21	26	4	51	40	4	3	37	37	5	1	2	22	19	10	27	23	6
Ireland.....	11	7	3	32	19	3	4	16	13	1	1	1	2	2	2	9	4	4
British Provinces.....	8	2	2	13	4	2	1	16	10	3	6	1	1	1	1	4	6	4
Italian.....	14	16	4	18	12	3	3	16	18	2	2	5	2	2	2	17	7	7
Russian.....	11	5	2	14	19	2	1	13	11	4	1	1	1	1	1	4	4	2
Other foreign.....	11	7	3	24	27	2	1	22	15	3	2	2	2	2	2	17	13	6
Mixed.....	6	8	1	14	14	3	2	13	21	1	1	1	1	1	1	10	4	3
One parent unknown.....	3	3	1	8	15	1	1	7	3	1	1	1	1	1	1	6	4	1
Unknown.....	90	82	19	198	158	28	24	16	140	142	17	20	11	18	10	151	86	28
Total.....	21	26	4	51	40	4	3	37	37	5	1	2	22	19	10	27	23	6
	JULY.			AUGUST.			SEPTEMBER.			OCTOBER.			NOVEMBER.			DECEMBER.		
	Under 1 yr.		1 yr. and under 2 yrs.	Under 1 yr.		1 yr. and under 2 yrs.	Under 1 yr.		1 yr. and under 2 yrs.	Under 1 yr.		1 yr. and under 2 yrs.	Under 1 yr.		1 yr. and under 2 yrs.	Under 1 yr.		1 yr. and under 2 yrs.
	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.
United States.....	21	26	4	51	40	4	3	37	37	5	1	2	22	19	10	27	23	6
Ireland.....	11	7	3	32	19	3	4	16	13	1	1	1	2	2	2	9	4	4
British Provinces.....	8	2	2	13	4	2	1	16	10	3	6	1	1	1	1	4	6	4
Italian.....	14	16	4	18	12	3	3	16	18	2	2	5	2	2	2	17	7	7
Russian.....	11	5	2	14	19	2	1	13	11	4	1	1	1	1	1	4	4	2
Other foreign.....	11	7	3	24	27	2	1	22	15	3	2	2	2	2	2	17	13	6
Mixed.....	6	8	1	14	14	3	2	13	21	1	1	1	1	1	1	10	4	3
One parent unknown.....	3	3	1	8	15	1	1	7	3	1	1	1	1	1	1	6	4	1
Unknown.....	90	82	19	198	158	28	24	16	140	142	17	20	11	18	10	151	86	28
Total.....	21	26	4	51	40	4	3	37	37	5	1	2	22	19	10	27	23	6

Consumption Included), in One-year and

MEASLES.			TYPHUS FE	
Deaths from.	Rate per 10,000 Living.		Deaths from.	Rate per 10,000 Living.
3	.36		69	8.18
1	.11		45	5.02
87	9.13		65	6.82
23	2.27	3.74	72	7.11
43	3.99		73	6.78
36	3.15		97	8.48
150	12.65		133	11.22
15	1.22		166	54.19
16	1.26	7.29	258	20.25
209	15.83		119	9.01
75	5.48		61	4.46

Table



One parent unknown.....	
Total.....	

Table XII.—Cases Reported, and Deaths from Smallpox, Diphtheria, Scarlet Fever, Typhoid Fever and Measles, with Percentages.

DATE.	SMALLPOX.		DIPHTHERIA AND CROUP.		PERCENTAGES.		SCARLET FEVER.		PERCENTAGES.		TYPHOID FEVER.		PERCENTAGES.		MEASLES.		PERCENTAGES.		LEPROSY.		Transferred.
	Cases.	Deaths.	Cases.	Deaths.			Cases.	Deaths.			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.			
1872.....	2,592	738	1,370	569	41.53	1,334	104	7.7	335	212	26.8	335	152	45.13	497	33	6.6	1,167	545	1	
1873.....	1,103	302	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1874.....	7	2	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1875.....	5	1	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1876.....	6	2	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1877.....	17	4	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1878.....	4	1	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1880.....	4	1	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1881.....	44	9.1	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1882.....	24	33.3	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1883.....	8	1	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1884.....	1	100.0	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1885.....	11	1	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1886.....	81	1	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1887.....	4	4	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1888.....	8	1	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1889.....	10	2	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1890.....	1	1	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1891.....	26	4	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1892.....	1892	1892	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1893.....	26	4	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1894.....	77	22	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1895.....	10	1	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1896.....	10	1	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1897.....	10	1	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1898.....	29	5	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1899.....	504	74	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1900.....	1,024	190	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1901.....	68	13	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1902.....	5	1	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1903.....	9	1	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1904.....	9	1	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1905.....	9	1	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1906.....	9	1	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	
1907.....	6	1	1,167	545	46.70	951	149	16.6	335	212	26.2	335	152	45.13	497	33	6.6	1,167	545	1	

* Including one case and one death at Quarantine.

† This percentage is not calculated, as the cases were only reported for a part of the year.

Table XIV. — Deaths of White and Colored with Death-rates per 1,000 Inhabitants to Total Deaths, and Deaths from Pneumonia, Cancer, Heart Disease and Kidney Diseases with Death Rates per 10,000 Inhabitants, from 1840 to 1907, inclusive.

YEARS.	POPULATION.	DEATHS.			Deaths from Pneumonia.	Death rate per 1,000 Inhabitants.	Deaths from 10,000 Inhabitants.	Deaths from Heart Disease.	Death rate per 10,000 Inhabitants.	Deaths from Kidney Diseases.	Death rate per 10,000 Inhabitants.
		White.	Colored.	Total.							
1840.	84,311	.....	.....	1,972	135	23.39	16.01	17	2.02	151	1.78
1841.	89,614	.....	.....	1,919	106	21.41	11.83	11	1.23	28	3.12
1842.	95,251	.....	.....	2,426	181	25.47	19.00	10	1.05	42	4.40
1843.	101,242	.....	.....	2,197	167	21.70	16.49	14	1.38	34	3.36
1844.	107,610	.....	.....	2,241	132	20.82	12.26	27	2.50	38	3.53
1845.	114,366	.....	.....	2,585	168	22.60	14.60	15	1.31	33	2.88
1846.	118,551	.....	.....	3,398	234	28.59	19.74	19	1.60	42	3.54
1847.	122,890	.....	.....	4,122	193	35.54	15.70	13	1.06	68	4.72
1848.	127,387	.....	.....	3,972	180	31.18	14.91	22	1.73	62	4.87
1849.	132,048	.....	.....	5,079	265	38.46	20.07	18	1.36	52	6.21
1850.	136,851	.....	.....	3,668	280	26.80	21.19	28	2.12	52	3.80
1851.	141,308	.....	.....	3,556	262	27.29	18.54	19	1.34	86	6.09
1852.	145,878	.....	.....	3,736	226	25.61	15.49	32	2.19	79	5.42
1853.	150,595	.....	.....	4,284	245	28.46	16.27	22	1.48	78	5.18
1854.	155,464	.....	.....	4,366	260	28.58	16.72	23	1.45	83	5.34
1855.	160,494	.....	.....	4,017	220	25.42	13.70	31	1.93	95	5.62
1856.	163,820	.....	.....	4,253	256	25.96	15.75	16	1.98	115	7.02
1857.	167,218	.....	.....	3,958	108	23.67	6.46	29	1.73	102	6.10
1858.	170,655	.....	.....	3,540	105	22.50	6.13	41	2.40	96	5.02
1859.	174,227	.....	.....	3,738	191	21.45	10.96	45	2.58	10	3.60
1860.	177,840	.....	.....	3,390	.....	24.68	.....	.....	.....	13	6.14
1861.	180,640	.....	.....	3,965	.....	21.95	.....	.....	.....	.....	.....
1862.	183,497	.....	.....	4,920	256	26.78	13.05	50	2.72	115	6.97
1863.	186,380	.....	.....	4,099	329	29.10	17.85	52	2.79	135	7.24
1864.	189,351	.....	.....	5,042	352	30.18	20.18	50	2.64	132	7.50
1865.	192,918	4,111	334	26.11	17.36	75	2.96	151	6.80
1866.	194,506	4,379	334	22.51	17.17	75	4.01	137	7.04
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1867	4,313	108	4,421	19.43	227	9.98	82	3.60	139	6.11	61	2.08
1868	5,429	90	5,519	23.89	358	15.50	85	3.67	172	7.44	82	2.55
1869	5,377	146	5,523	22.40	402	16.34	107	4.34	156	6.44	107	2.55
1870	5,697	133	6,100	24.35	336	13.41	111	4.43	159	7.82	121	4.83
1871	5,762	126	5,888	22.82	527	22.82	102	3.95	239	9.62	142	5.50
1872	7,917	173	8,090	30.44	517	19.45	104	3.91	207	7.79	170	6.70
1873	7,624	245	7,869	24.50	463	14.41	141	4.39	144	4.48	149	4.64
1874	7,614	198	7,812	23.57	471	17.23	140	4.22	328	9.90	172	5.19
1875	8,901	159	9,060	26.50	632	18.48	133	3.01	369	9.42	142	4.15
1876	8,099	154	8,253	23.85	523	15.13	164	4.03	322	10.66	126	3.64
1877	7,142	174	7,316	20.89	484	13.82	190	5.43	285	8.14	176	5.02
1878	7,492	144	7,636	21.55	581	16.40	196	5.53	359	10.13	204	5.76
1879	7,202	196	7,398	20.63	613	17.10	195	5.44	383	10.68	298	5.52
1880	8,363	168	8,531	23.51	650	17.91	229	6.31	425	11.71	226	6.23
1881	8,752	234	9,016	24.49	684	18.58	241	6.55	465	12.63	259	7.03
1882	8,757	208	8,995	24.07	681	18.23	253	6.77	509	13.62	279	7.47
1883	9,513	227	9,740	25.69	757	19.97	293	7.73	528	13.93	280	7.39
1884	9,374	248	9,622	25.01	764	19.86	282	7.33	530	13.78	306	7.95
1886	9,386	232	9,618	24.64	963	24.67	274	7.02	563	14.42	343	8.79
1887	9,834	249	9,968	23.09	778	19.38	299	7.45	581	14.47	340	8.47
1888	9,952	245	10,197	24.41	795	19.26	324	7.85	619	15.00	331	8.02
1889	10,019	240	10,259	24.03	990	23.33	279	6.58	668	15.74	335	7.90
1890	9,920	261	10,181	22.70	934	21.41	306	7.01	789	18.09	319	7.31
1891	10,301	270	10,571	23.09	1,149	24.35	326	7.27	783	17.46	297	6.62
1892	10,951	285	11,236	24.05	1,222	26.15	317	6.92	764	16.69	324	7.08
1893	11,427	283	11,710	24.55	1,540	32.29	328	7.02	890	19.07	356	7.40
1894	11,222	298	11,520	23.66	1,119	22.99	310	6.50	839	18.46	376	7.88
1895	11,034	295	11,329	22.60	1,268	25.30	354	7.27	859	17.23	373	7.66
1896	11,805	323	11,634	22.53	1,387	26.86	391	7.90	870	17.36	377	7.52
1897	10,862	292	11,154	21.09	1,236	23.36	389	7.53	861	16.87	410	7.94
1898	10,620	266	10,886	20.09	1,169	21.57	400	7.66	870	16.87	410	7.73
1899	10,858	309	11,167	20.12	1,455	26.21	412	7.66	913	17.26	409	7.44
1900	11,368	292	11,678	20.82	1,241	22.13	402	7.24	934	17.23	428	7.52
1901	11,008	297	11,300	19.91	1,099	19.36	455	8.06	1,066	17.99	422	7.71
1902	10,645	338	10,983	19.01	1,115	19.41	482	8.39	1,093	16.97	438	9.41
1903	10,335	297	10,632	18.29	1,265	21.76	511	8.81	1,033	17.96	556	9.68
1904	10,581	258	10,757	18.28	1,323	22.49	565	9.60	1,086	17.06	563	9.23
1905	10,750	257	10,907	18.49	1,274	21.40	628	10.55	1,086	17.95	543	9.54
1906	11,007	314	11,411	18.94	1,351	22.09	586	9.73	1,118	18.17	630	10.46
1907	11,393	293	11,686	19.16	1,233	20.22	611	10.02	1,211	19.86	627	10.28

COMPARATIVE DEATHS IN AMERICAN AND FOREIGN CITIES.

The following tables have been prepared to show the comparison of deaths in a few large American and foreign cities, as compared with the City of Boston. It is to be regretted that the amount of information desired is not fully complete, owing to the scarcity of material and information furnished, but, in their present condition, as a matter of reference, they may be of value:

Table XVI. — Boston.

YEARS.	Population.	Total Deaths.	Population of Children under 5 years of age. ¹	Deaths of Children under 5 years of age.	Deaths from Diphtheria.	Deaths from Scarlatina.	Deaths from Typhoid Fever.	Deaths from Measles.
1880.....	362,839	8,531	29,649	3,349	588	33	154	49
1881.....	368,190	9,016	30,809	3,314	601	35	207	108
1882.....	373,623	8,995	31,969	3,151	458	75	212	25
1883.....	379,129	9,740	33,129	3,627	445	211	198	152
1884.....	384,720	9,622	34,289	3,570	345	209	216	13
1885.....	390,393	9,618	35,449	3,466	334	156	152	84
1886.....	401,374	9,268	36,582	3,186	329	81	135	36
1887.....	412,663	10,073	37,717	3,662	316	195	183	119
1888.....	424,274	10,197	38,849	3,509	470	65	170	27
1889.....	436,208	10,259	39,983	3,633	564	23	186	48
1890.....	448,477	10,181	40,001	3,349	401	42	155	19
1891.....	457,772	10,571	41,358	3,608	232	64	154	21
1892.....	467,260	11,236	42,715	3,735	414	262	137	19
1893.....	476,945	11,710	44,072	3,987	476	248	148	27
1894.....	486,830	11,520	45,430	4,108	817	192	141	8
1895.....	501,083	11,329	46,787	3,935	588	114	163	19
1896.....	516,305	11,634	48,902	4,055	516	121	162	27
1897.....	528,912	11,154	51,017	3,708	411	136	173	21
1898.....	541,827	10,886	53,131	3,577	170	33	185	27
1899.....	555,057	11,167	55,246	3,591	277	74	165	33
1900.....	560,892	11,678	57,361	3,752	2537	181	143	88
1901.....	567,617	11,300	59,476	3,469	2353	210	142	103
1902.....	574,465	10,983	61,591	3,367	225	87	139	66
1903.....	581,357	10,632	63,706	3,079	214	65	119	50
1904.....	588,320	10,757	65,821	3,105	206	39	135	89
1905.....	595,380	11,007	67,936	3,024	132	44	117	54
1906.....	602,526	11,411	70,051	3,439	152	39	122	61
1907.....	609,757	11,686	72,166	3,160	144	49	64	29

¹ Estimated. ² The deaths from diphtheria since 1899 include membranous croup.



Table XVII. — (Old City of) New York, N. Y.

YEARS.	Population.	Total Deaths.	Population of Children under 5 years of age. ¹	Deaths of Children under 5 years of age.	Deaths from Diphtheria.	Deaths from Scarlatina.	Deaths from Typhoid Fever.	Deaths from Measles.
1880 ¹	1,209,268	31,937	140,673	14,650	1,390	618	372	479
1881.....	1,246,011	38,642	144,947	17,737	2,249	1,964	594	429
1882.....	1,288,870	37,924	149,351	17,520	1,525	2,066	516	913
1883.....	1,322,880	34,011	153,899	13,856	1,009	744	625	716
1884.....	1,363,075	35,044	158,565	15,272	1,090	608	476	762
1885.....	1,404,401	35,682	163,383	15,267	1,325	559	405	736
1886.....	1,447,166	37,351	168,347	16,121	1,727	371	433	668
1887.....	1,491,137	38,933	173,462	16,766	2,167	569	421	767
1888.....	1,536,444	40,175	178,733	17,358	1,914	1,361	364	591
1889.....	1,583,120	39,679	184,164	17,152	1,686	1,242	397	470
1890.....	1,631,232	40,103	189,760	16,305	1,262	408	352	730
1891.....	1,680,796	43,659	195,525	18,224	1,361	1,220	384	663
1892.....	1,708,124	44,317	.....	18,589	1,425	975	399	863
1893.....	1,758,010	44,479	.....	17,914	1,968	552	381	390
1894.....	1,809,353	41,175	.....	17,596	2,359	541	326	584
1895.....	1,873,201	43,420	210,523	18,221	1,634	468	322	798
1896 ²	1,906,139	41,622	210,523	16,807	1,555	402	297	714
1897.....	1,940,553	38,887	226,327	15,394	1,377	500	299	391
1898.....	1,976,572	40,438	233,150	15,591	922	524	376	446
1899.....	2,014,330	39,911	240,714	14,391	940	332	294	379
1900.....	2,053,979	43,227	233,537	15,646	1,121	315	372	470
1901.....	2,095,686	43,307	239,703	14,810	1,227	635	412	272
1902.....	2,139,632	41,704	245,202	15,019	1,142	635	400	462
1903.....	2,186,017	41,776	250,517	13,741	1,232	465	350	321
1904.....	2,235,060	48,743	256,137	16,136	1,272	534	309	556
1905.....	2,390,382	45,199	273,937	15,287	860	271	310	314
1906.....	2,464,432	46,108	282,423	15,534	983	212	369	662
1907.....	2,541,084	47,898	291,208	15,645	1,015	421	420	430

¹ Estimated.² Estimated July 1, 1896.

Table XVIII. — Philadelphia, Pa.

YEARS.	Population.	Total Deaths.	Population of Children under 5 years of age.	Deaths of Children under 5 years of age.	Deaths from Diphtheria.	Deaths from Scarlatina.	Deaths from Typhoid Fever.	Deaths from Measles.
1880 ¹	846,980	17,711	¹ 91,544	6,594	323	291	498	108
1881	868,000	19,515	² 92,744	7,124	457	486	645	17
1882	886,539	20,059	94,044	7,254	933	310	650	91
1883	907,041	20,076	95,234	7,417	1,006	561	579	58
1884	927,995	19,999	96,465	7,606	680	540	662	96
1885	949,432	21,392	97,965	8,188	600	375	610	131
1886	971,363	20,005	98,925	7,351	411	248	618	19
1887	993,801	21,719	100,155	8,421	416	159	621	358
1888	1,016,758	20,372	101,386	7,269	350	235	785	24
1889	1,040,245	20,536	102,616	7,752	375	298	736	92
1890 ¹	1,046,964	21,732	¹ 103,847	7,913	528	189	666	105
1891	1,069,264	23,367	105,077	8,479	918	341	684	25
1892	1,092,168	24,305	.....	9,305	1,425	484	539	74
1893	1,115,562	23,655	.....	8,690	892	267	456	88
1894	1,139,457	22,680	.....	8,160	1,047	154	369	33
1895	1,163,864	23,797	.....	8,401	1,020	79	469	84
1896	1,188,793	23,982	.....	8,661	862	61	402	191
1897	1,214,256	22,735	.....	7,605	1,231	282	401	64
1898	1,240,266	23,790	.....	7,998	998	114	² 639	234
1899	1,266,832	23,796	.....	7,056	849	132	948	7
1900	1,293,697	25,078	.....	8,078	898	163	449	382
1901	1,321,408	24,137	.....	6,840	525	219	444	26
1902	1,349,712	23,847	.....	6,922	435	143	588	112
1903	1,378,624	25,947	.....	7,079	521	159	744	220
1904	1,408,154	25,972	142,771	7,369	542	201	957	141
1905	1,438,318	24,807	145,845	6,978	452	60	684	53
1906	1,469,126	27,372	.....	8,525	546	56	1,063	344
1907	1,500,596	27,462	147,988	7,669	509	100	890	65

¹ Census years.² Estimated on the increase of census years.³ Seventy-three of these were soldiers who contracted the disease in camps.

Table XIX. — Chicago, Ill.

YEARS.	Population Estimated.	Total Deaths.	Population of Children un- der 5 years of age.	Deaths of Chil- dren under 5 years of age.	Deaths from Diphtheria.	Deaths from Scarlatina.	Deaths from Typhoid Fever.	Deaths from Measles.
1880.....	503,298	10,462						
1881.....	540,000	13,874						
1882.....	560,639	13,234		6,645				
1883.....	580,000	11,555		5,875				
1884.....	630,000	12,471		6,666				
1885.....	665,000	12,474		6,187	706	279	496	78
1886.....	704,000	13,699		6,763	944	220	483	126
1887.....	760,000	15,400		7,568	1,002	190	381	341
1888.....	830,000	15,772		7,533	858	184	375	151
1889.....	1,106,000	16,946		8,204	1,126	185	453	204
1890.....	1,200,000	21,869		9,954	881	193	1,008	67
1891.....	1,250,000	27,754		12,801	958	499	1,997	265
1892.....	1,438,000	26,219		11,662	1,014	382	1,489	185
1893.....	1,600,000	27,095		12,364	975	329	670	234
1894.....	1,567,727	23,701		12,363	841	190	491	182
1895.....	1,600,000	24,319	227,200	10,449	1,775	77	518	158
1896.....	1,619,226	23,262	192,453	15,336	955	54	751	73
1897.....	1,619,226	21,809	192,453	8,456	702	81	437	139
1898.....	1,650,000	22,747	196,193	8,185	622	67	636	55
1899.....	1,950,000	25,503	196,299	8,880	843	533	442	168
1900.....	1,698,575	24,941	220,824	8,282	797	226	387	194
1901.....	1,758,025	24,406		7,489	495	165	509	158
1902.....	1,820,000	26,455	204,061	8,027	596	445	801	123
1903.....	1,885,000	28,923	211,200	7,879	614	296	588	276
1904.....	1,932,315	26,302	202,893	7,052	395	143	373	47
1905.....	1,990,750	27,212	222,601	8,512	426	79	329	231
1906.....	2,049,185	29,048	210,041	8,792	547	493	370	128
1907.....	2,107,620	32,143	213,713	10,077	536	715	376	258

¹ School census, July 1, 1896.

Table XX. — Brooklyn, N. Y.

YEARS.	Population.	Total Deaths.	Population of Children under 5 years of age.	Deaths of Children under 5 years of age.	Deaths from Diphtheria.	Deaths from Scarlatina.	Deaths from Typhoid Fever.	Deaths from Measles.	Deaths from Consumption.
1885.....	687,000	15,369	89,310	6,756	519	363	153	175	1,995
1886.....	747,000	15,790	97,110	7,000	782	340	123	106	2,085
1887.....	778,800	17,079	101,140	7,577	950	271	143	172	2,026
1888.....	810,000	18,061	105,300	8,019	984	475	153	59	2,051
1889.....	842,000	18,480	109,460	8,265	1,101	273	161	205	2,055
1890.....	875,000	19,827	113,750	8,462	902	227	182	111	2,169
1891.....	910,000	21,349	118,300	9,388	766	485	180	203	2,117
1892.....	898,256	20,807	122,850	8,971	775	412	162	168	2,128
1893.....	928,408	21,017	127,400	8,763	607	307	179	111	2,174
1894.....	959,572	21,183	135,850	9,235	1,279	188	158	204	2,260
1895.....	991,782	22,568	124,000	9,277	1,139	124	173	192	2,299
1896.....	1,025,074	22,497	146,000	9,006	1,063	150	163	333	2,245
1897.....	1,060,483	20,674	130,500	8,252	795	187	173	190	2,164
1898.....	1,095,047	21,856	134,793	8,414	742	159	267	193	2,384
1899.....	1,131,805	21,649	.....	8,072	583	175	205	197	2,435
1900.....	1,169,796	23,057	131,719	8,776	673	130	301	310	2,445
1901.....	1,209,064	23,271	124,500	8,151	733	496	274	160	2,474
1902.....	1,249,650	22,344	145,324	7,983	762	275	322	239	2,317
1903.....	1,291,597	22,192	.....	7,068	830	244	267	167	2,376
1904.....	1,334,952	24,831	155,254	8,042	706	282	303	333	2,634
1905.....	1,362,352	23,935	158,441	7,794	594	132	297	193	2,420
1906.....	1,404,569	25,024	154,502	8,547	793	258	230	446	2,557
1907.....	1,448,095	26,043	168,413	8,392	603	321	271	288	2,515

¹ Estimated.

Table XXI. — St. Louis.

YEARS.	Population.	Total Deaths.	Deaths of Children under 5 years of age.	Deaths from Diphtheria.	Deaths from Scarlet Fever.	Deaths from Typhoid Fever.	Deaths from Measles.	Deaths from Consumption.
1885.....	400,000	7,490	3,090	<i>Diph.-Croup.</i> 392 — 109	164	125	54	888
1886.....	400,000	8,268	3,434	719 — 160	149	124	6	915
1887.....	420,000	9,155	3,795	927 — 185	48	116	40	829
1888.....	440,000	9,015	3,659	564 — 167	30	130	31	800
1889.....	450,000	8,004	3,149	345 — 94	114	146	63	655
1890.....	460,000	8,409	3,115	186 — 58	87	140	1	843
1891.....	480,000	9,530	3,493	250 — 90	96	165	53	869
1892.....	500,000	10,225	3,607	195 — 91	150	441	7	882
1893.....	520,000	10,303	3,548	227 — 144	79	215	26	984
1894.....	540,000	8,710	3,192	240 — 139	29	171	3	875
1895.....	560,000	9,425	3,373	512 — 171	18	107	38	1,000
1896.....	570,000	9,897	3,326	273 —	11	108	17	1,026
1897.....	600,000	9,554	2,799	170 — 70	19	123	1	997
1898.....	623,000	8,908	3,358	152 — 51	28	95	21	1,001
1899.....	640,000	10,024	3,005	192 —	34	131	15	1,091
1900.....	575,200	9,849	.....	344 — 64	57	148	45	1,006
1901.....	598,000	10,601	.....	259 —	69	176	34	1,128
1902.....	621,000	10,353	2,671	160 —	132	222	10	1,131
1903.....	645,000	11,145	2,842	162 —	89	288	140	1,126
1904.....	685,000	11,506	2,443	136 —	64	225	33	1,328
1905.....	685,000	10,342	2,196	111 —	13	122	52	1,257
1906.....	710,000	9,980	2,304	105 —	18	111	10	1,315
1907.....	710,000	10,326	.....	83 —	24	102	77	1,109

Table XXII. — London, England.

YEARS.	Population.	Total Deaths.	Population of Children under 5 years of age.	Deaths of Children under 5 years of age.	Deaths from Diphtheria.	Deaths from Scarlatina.	Deaths from Typhoid Fever.	Deaths from Measles.
1880.....	3,771,139	81,832	.....	36,220	544	3,100	702	1,521
1881.....	3,824,960	81,071	497,044	33,325	654	2,108	977	2,533
1882.....	3,861,876	82,905	.....	36,259	853	2,004	975	2,329
1883.....	3,901,164	80,578	.....	33,552	951	1,989	935	2,420
1884.....	3,939,832	83,050	.....	36,030	973	1,444	936	2,285
1885.....	3,978,883	80,000	.....	32,913	896	707	585	2,928
1886.....	4,018,321	82,276	.....	34,319	846	688	618	2,078
1887.....	4,058,150	82,304	.....	35,236	953	1,419	612	2,904
1888.....	4,098,374	79,099	.....	32,669	1,311	1,190	694	2,425
1889.....	4,138,996	76,026	.....	30,469	1,616	771	528	2,308
1890.....	4,180,021	89,554	.....	36,123	1,417	876	618	3,291
1891.....	4,221,452	90,216	501,558	33,340	1,361	589	547	1,807
1892.....	4,263,294	87,749	.....	34,560	1,885	1,174	486	3,393
1893.....	4,306,411	91,536	.....	35,200	3,265	1,596	719	1,661
1894.....	4,349,166	77,039	.....	31,366	2,670	962	635	3,293
1895.....	4,392,346	86,937	.....	35,095	2,316	829	614	2,633
1896.....	4,421,955	83,511	.....	35,599	2,683	942	591	3,697
1897.....	4,463,169	80,944	.....	32,238	2,263	781	593	1,928
1898.....	4,504,766	83,936	536,522	34,184	1,772	583	585	3,075
1899.....	4,506,752	89,689	541,523	32,073	1,964	398	801	2,143
1900.....	4,589,129	86,007	546,570	30,979	1,558	361	756	1,936
1901.....	4,544,983	79,924	.....	.....	1,344	584	548	1,958
1902.....	4,579,110	82,540	500,259	28,768	1,181	563	585	2,362
1903.....	4,613,812	72,019	504,050	25,627	1,752	362	396	2,054
1904 ¹	4,649,038	76,694	.....	.....	753	365	297	2,264
1905 ¹	4,684,794	73,002	518,794	24,838	553	549	246	1,715
1906 ¹	4,721,217	73,990	515,784	25,300	703	533	275	1,918
1907.....	4,758,218	70,013	.....	.....	781	644	194	1,801

¹ Excluding group.² Including group.³ Deaths for 52 weeks.

Table XXIII. — Paris, France.

YEARS.	Population.	Total Deaths.	Population of Children under 5 years of age. ¹	Deaths of Children under 5 years of age.	Deaths from Diphtheria.	Deaths from Scarlatina.	Deaths from Typhoid Fever.	Deaths from Measles.
1880.....		55,706		17,674	2,048	345	2,003	962
1881.....	2,239,938	55,103	148,601	17,159	2,211	440	1,955	897
1882.....		56,854		17,158	2,244	156	3,214	1,005
1883.....		54,763		16,843	1,781	88	1,880	1,043
1884.....		55,050		16,968	1,928	155	1,503	1,501
1885.....		52,726		15,244	1,655	191	1,320	1,524
1886.....	2,260,945	55,110	146,177	16,493	1,512	403	954	1,210
1887.....		52,836		15,206	1,585	224	1,385	1,628
1888.....		51,230		14,463	1,729	193	756	915
1889.....		54,083		14,679	1,706	170	1,008	1,190
1890.....		54,556	150,490	15,068	1,668	223	665	1,495
Census of 12th April 1891.....	2,424,705							
1891.....	2,424,705	54,443	150,490	14,048	1,531	208	549	1,020
1892.....	2,424,705	54,536	150,490	14,353	1,403	198	691	999
1893.....	2,424,705	52,955		13,046	1,266	177	570	677
1894.....	2,424,705	² 49,205	150,490	11,901	1,009	151	697	993
1895.....	2,424,705	51,451			421	179	274	682
1896.....	2,511,629	47,929	188,941	10,363	444	190	262	656
1897.....	2,511,629	46,988	156,494	10,528	298	65	249	821
1898.....	2,511,629	49,574	156,494	11,671	259	138	256	876
1899.....	2,511,629	50,511			336	196	754	901
1900.....	2,511,629	51,725		8,966	294	172	912	854
1901.....	2,660,494	50,195		10,237	628	113	363	578
1902.....	2,660,559	49,275	196,494		529	64	17	625
1903.....	2,660,559	46,557			396	135	280	441
1904.....	2,660,559	47,354	170,694	8,953	250	78	334	564
1905.....	2,722,731	47,647	³ 170,694	8,617	169	78	294	570
1906.....								
1907.....								

¹ Estimated, 1891.² Inhabitants of Paris only.³ Census of 1901.

Table XXIV. — Vienna, Austria.

YEARS.	Population.	Total Deaths.	Population of Children under 5 years of age.	Deaths of Children under 5 years of age.	Deaths from Diphtheria and Croup.	Deaths from Scarlatina.	Deaths from Typhoid Fever.	Deaths from Measles.
1880.....	721,016	20,453	58,023	8,219	597	172	171	98
1881.....	741,208	21,549	.....	8,224	539	286	171	106
1882.....	749,919	21,595	.....	8,908	522	410	187	203
1883.....	750,762	21,194	.....	7,930	360	150	157	246
1884.....	759,849	20,352	.....	7,688	342	130	95	344
1885.....	769,889	21,976	.....	8,668	464	83	106	289
1886.....	780,066	20,869	.....	8,114	546	124	85	338
1887.....	790,381	20,549	.....	9,812	455	391	80	493
1888.....	800,836	20,349	.....	7,547	521	230	107	253
1889.....	811,434	20,106	.....	7,624	513	139	103	364
1890.....	822,176	20,324	69,710	7,853	536	92	77	459
1891.....	1,378,530	34,479	130,808	15,610	1,311	271	85	855
1892.....	1,406,933	35,134	.....	16,843	1,580	242	116	825
1893.....	1,435,931	34,515	130,808	15,002	1,615	311	105	1,225
1894.....	1,465,637	33,994	140,545	15,073	1,679	413	74	898
1895.....	1,495,764	34,879	.....	15,021	710	437	86	754
1896.....	1,526,623	34,132	.....	14,685	621	436	79	930
1897.....	1,551,129	33,187	.....	13,946	575	236	84	857
1898.....	1,590,295	32,356	.....	13,593	520	227	93	794
1899.....	1,623,134	33,333	.....	.....	463	261	66	684
1900.....	1,656,662	34,303	160,233	13,650	306	168	137	741
1901.....	1,691,996	33,502	.....	12,476	387	367	76	634
1902.....	1,726,604	33,857	.....	13,399	438	277	51	769
1903.....	1,744,177	33,172	.....	.....	426	222	68	378
1904.....	1,797,992	32,931	.....	12,270	386	65	60	1,021
1905.....	1,897,630	36,671	213,884	13,282	458	181	83	587
1906.....	.....	.....	.....	.....	.....	.....	.....	.....
1907.....	.....	.....	.....	.....	.....	.....	.....	.....

Table XXV. — Glasgow, Scotland.

YEARS.	Population.	Total Deaths.	Population of Children under 5 years of age.	Deaths of Children under 5 years of age.	Deaths from Diphtheria.	Deaths from Scarlatina.	Deaths from Typhoid Fever.	Deaths from Measles.
1880.....		13,303		6,071	150	453	278	331
1881 census . . .	511,415	12,909	69,931	5,386	162	256	166	333
1882.....		12,985		5,972	177	263	162	213
1883.....		14,476		6,494	132	449	167	605
1884.....		13,839		6,174	157	412	184	335
1885.....		13,444		6,156	112	288	102	430
1886.....		13,053		5,601	111	345	81	90
1887.....		12,055		5,367	174	234	100	302
1888.....		11,533		4,743	168	163	59	205
1889.....		12,890		5,970	167	109	111	594
1890.....		13,222		5,768	139	124	108	583
1891 census. . .	565,710	14,149	72,481	5,432	131	201	123	490
1892.....	669,059	15,128	84,860	6,306	162	304	102	781
1893.....	677,888	15,798	85,968	6,953	208	263	120	855
1894.....	686,820	13,674	87,103	5,326	245	204	150	250
1895.....	695,876	16,332	88,250	6,458	112	180	121	330
1896.....	705,052	14,388	89,413	6,153	83	139	139	814
1897.....	714,419	15,727	90,665	6,750	97	132	172	574
1898.....	724,349	15,333	91,861	6,530	103	188	223	536
1899.....	733,903	15,828	93,073	6,196	106	202	179	546
1900.....	755,780	15,924		6,487	125	210	158	461
1901.....	761,712				123	131	210	499
1902.....	775,601	15,054			127	113	110	266
1903.....	786,897	14,483		5,816	118	82	142	346
1904.....	798,357	14,794	95,164	5,913	91	69	84	328
1905.....	809,986	13,758		5,502	107	35	53	551
1906.....	835,625	14,889	99,682	5,447	147	48	90	394
1907.....	847,584	15,659	101,066	5,806	131	45	99	399

Table XXVI. — Liverpool, England.

YEARS.	Population.	Total Deaths.	Population of Children under 5 years of age.	Deaths of Children under 5 years of age.	Deaths from Diphtheria.	Deaths from Scarlatina.	Deaths from Typhoid Fever.	Deaths from Measles.
1884.....	541,031	14,382	.....	6,908	80	197	112	611
1885.....	537,548	13,764	.....	6,213	133	190	95	716
1886.....	534,088	13,919	.....	6,152	125	277	140	273
1887.....	530,649	14,006	.....	6,218	95	321	130	661
1888.....	527,533	12,159	.....	5,070	66	187	125	331
1889.....	523,838	13,047	.....	5,921	57	352	167	485
1890.....	520,466	14,293	.....	6,319	104	577	99	535
1891.....	517,145	13,911	.....	5,697	63	119	92	320
1892.....	513,818	12,671	.....	5,822	47	131	111	456
1893.....	510,514	13,919	.....	6,035	47	231	221	273
1894.....	507,230	12,073	64,544	5,214	65	232	248	299
1895.....	638,291	16,215	78,411	7,201	97	168	192	397
1896.....	632,512	14,617	.....	.....	157	227	206	306
1897.....	644,129	15,290	78,411	6,972	91	209	145	344
1898.....	668,645	15,380	.....	6,489	123	145	148	283
1899.....	668,645	16,269	83,042	7,039	189	164	174	320
1900.....	668,645	16,393	83,042	6,417	143	113	120	150
1901.....	686,322	15,493	85,238	6,473	158	192	154	472
1902.....	710,337	15,392	85,885	6,378	222	318	190	334
1903.....	716,810	14,210	85,885	5,786	165	201	108	132
1904.....	723,430	15,851	88,475	7,826	181	149	82	696
1905.....	730,143	14,050	89,296	5,726	151	298	47	239
1906.....	739,180	15,001	90,382	6,686	148	188	79	576
1907.....	746,144	13,676	91,250	5,301	107	132	80	286

Table XXVII. — Berlin, Germany.

YEARS.	Population.	Total Deaths. ¹	Population of Children under 5 years of age.	Deaths of Children under 5 years of age.	Deaths from Diphtheria.	Deaths from Scarlatina.	Deaths from Typhoid Fever.	Deaths from Measles.
Beginning.	1,089,070		142,476					
1880.		32,823		19,249	1,198	872	527	376
End.	1,123,749		183,060					
1881.		31,055		17,483	1,593	903	352	201
End.	1,158,539		143,828					
1882.		30,465		16,990	1,914	604	357	144
End.	1,196,205		146,138					
1883.		35,056		19,902	2,651	867	222	1,173
End.	1,232,716		144,464					
1884.		32,932		18,440	2,446	395	243	295
End.	1,271,677		144,620					
1885.		31,483		15,558	1,816	409	214	406
End.	1,315,656		146,227					
1886.		34,293		19,215	1,535	271	181	565
End.	1,363,031							
1887.		30,336		15,777	1,305	257	193	223
End.	1,415,269							
1888.		29,298		15,076	1,018	201	188	364
End.	1,472,151							
1889.		34,460		18,394	1,189	244	290	201
End.	1,528,721							
1890.	² 1,579,524	33,393	² 164,370	17,630	1,492	298	143	441
End.								
1891.	1,601,327			16,800	1,010	150	166	130
1892.	1,656,715	32,696	172,378	16,319	1,325	53	137	217
1893.	1,714,948	36,032			1,578	582	161	341
1894.	1,655,235	30,961	176,200	14,649	1,361	443	69	203
1895.	1,677,304	33,627	164,258	16,034	934	817	95	175
1896.	1,695,313	30,578		13,443	515	333	80	111
1897.	1,758,885	30,622	58,339	13,825	507	217	71	161
1898.	1,805,054	30,571	56,751	13,595	608	268	78	119
1899.	1,817,952	34,011	166,888	14,878	609	525	74	530
1900.	1,864,203	35,409		15,498	534	502	109	195
1901.	1,891,900	34,091		14,839	469	492	88	174
1902.	1,920,459	30,737		11,724	205	272	52	373
1903.	1,955,875	31,879		12,254	218	331	63	341
1904.	2,040,455	31,557			339	414	75	412
1905.	2,066,850	34,450	178,573	13,240	370	428		418
1906.								
1907.	2,096,318	34,276	183,441	10,833	469	179	78	398

¹ Census of December 1, 1890.² Excluded: Still-born, 1,749, 1,771, 1,759, 1,707, 1,778, 1,848, 1,710, 1,761, 1,756, 1,789, 1,473.

REMOVAL OF BODIES.

During the year permits were given for the removal of 402 bodies, chiefly from one cemetery to another.

STILL-BIRTHS.

In living births a larger proportion of males than females is born each year. In still-births the proportion is vastly larger. The still-born males in the City of Boston for the year 1907 were in the ratio of 139 to 100 females. The appended table, XXVIII., shows that there has been a steady decreasing ratio of the still-births to the total births for a period of twenty years, except from 1900-06, inclusive.

Table XXVIII. — Still-births, by Months, with Percentages to Total Births and Ratio to 1,000 Inhabitants for Twenty Years.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	* Total Number of Liv- ing Births.	Percentage to Total Births.	Ratio to 1,000 Inhabitants.
1888.....	48	48	38	34	52	56	48	40	55	38	48	47	552	12,613	4.19	1.33
1889.....	43	51	49	54	61	59	46	50	46	51	44	44	598	12,787	4.57	1.42
1890.....	55	40	52	58	49	52	51	49	54	50	68	59	527	13,289	4.50	1.39
1891.....	43	46	55	55	55	53	56	49	40	50	57	57	614	13,957	4.71	1.33
1892.....	44	46	52	57	50	53	51	57	44	53	57	54	633	15,165	4.18	1.34
1893.....	54	48	52	56	42	41	41	45	53	56	61	61	705	15,407	4.58	1.34
1894.....	56	56	50	50	63	58	48	52	52	52	61	50	607	15,407	4.37	1.39
1895.....	38	47	52	62	41	57	58	63	50	36	51	50	648	16,413	3.74	1.21
1896.....	69	48	51	45	63	57	52	46	58	50	58	49	614	16,484	3.40	1.16
1897.....	52	55	61	55	62	43	42	46	58	52	59	48	613	16,950	3.71	1.13
1898.....	50	48	49	61	58	45	53	36	53	40	59	56	539	16,950	3.21	1.07
1899.....	46	60	40	43	48	52	41	43	35	37	56	39	573	16,430	3.54	1.02
1900.....	51	40	63	42	56	46	40	46	42	57	41	61	576	15,580	3.56	1.01
1901.....	42	50	45	53	53	59	39	66	55	42	50	63	623	15,540	3.89	1.08
1902.....	51	51	51	53	61	60	53	54	51	55	44	44	635	15,701	3.80	1.09
1903.....	52	53	62	50	66	60	52	65	54	49	46	49	663	16,211	3.93	1.13
1904.....	57	58	58	59	47	64	54	59	53	61	59	51	670	15,868	4.22	1.13
1905.....	54	66	51	50	61	61	71	54	49	62	49	42	658	16,000	4.11	1.09
1906.....	42	61	65	50	56	58	63	60	55	66	53	76	732	18,051	4.05	1.20
1907.....	62	57	65	61	56	58	63	60	55	66	53	76	732	18,051	4.05	1.20
Totals.....	1,021	1,018	1,054	1,063	1,068	1,093	1,018	1,054	982	1,031	1,025	1,053	12,480	309,180		
Average.....	51	51	53	53	53	54	51	53	49	51	51	53	624	15,459		

Table XXIX. — Cremations in the United States, 1876-1907, inclusive.

CREMATION.

For centuries the method of disposal of the dead was entombment and earth-burial. About a quarter of a century ago cremation of dead bodies was introduced, and this method is now gradually spreading among civilized nations, as will be seen by the following table.

In order to ascertain the annual increasing number of cremations, official inquiries were addressed to the superintendents of the different crematories in the United States and Europe.

CREMATORIES.	Date estab- lished	1876 to 1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.
New York City (U. S. Cre- mation Company).....	1885			9	77	67	83	106	160	187	186	222	243	296	330	331	466	528	602	654	647	720	841	845	904	932
Buffalo, N. Y.	1885			1	8	17	16	23	30	38	27	30	31	41	28	44	40	43	67	50	60	55	74	64	68	75
Troy, N. Y.	1890								4	10	14	15	12	10	18	14	13	20	16	19	23	20	20			
Swinburne Island, N. Y.	1889								2		60	28	8	1	1	3	3	4	2	3	3	2	3	3		
Waterville, N. Y.	1893											1	1	6	5	4	4	6	10	1	6	1	5	10	2	5
St. Louis, Mo.	1888							21	20	42	60	64	72	96	86	118	109	123	142	135	136	165	190	159	202	174
Philadelphia, Pa.	1888							14	28	31	51	62	68	86	85	78	114	99	118	118	130	158	160	168	131	155
San Francisco, Cal. (Odd Fellows).....	1895													66	101	214	260	347	547	666	614	695	893	951	798	819
Boston, Mass.	1893												1	87	88	135	160	167	235	188	171	217	225	211	227	238
Cincinnati, O.	1887							11	21	34	45	43	34	66	46	71	59	56	81	89	69	79	92	92	100	117
San Francisco, Cal. (Cy- press Lawn).....	1893												42	111	88	70	54	107	98	91	352	169	133	114	105	141

HEALTH DEPARTMENT.

[illegible]

Table XXX. — Summary of Crematories and Cremations in Several European Cities.

CREMATORIES.	1878 to 1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907
Germany.																								
(Gotha.....)	215	76	95	110	95	128	111	162	162	153	139	132	147	188	179	200	189	218	234	276	301	870	445	.....
Heidelberg.....	.....	.....	.....	.....	.....	.....	.....	3	57	50	79	91	96	105	125	151	146	104	164	146	155	127	86	.....
Hamburg.....	.....	.....	.....	.....	.....	.....	.....	.....	2	48	98	41	70	81	98	111	145	181	187	225	280	367	.....	.....
Jena.....	.....	.....	.....	.....	.....	.....	.....	Jena.....	.....	.....	.....	.....	.....	.....	21	46	47	81	91	123	198	215	183	.....
Offenbach.....	.....	.....	.....	.....	.....	.....	.....	Offenbach.....	.....	.....	.....	.....	.....	.....	.....	5	110	82	128	118	123	142	155	.....
Total.....	215	76	95	110	95	128	111	165	221	251	316	264	313	374	423	513	637	666	804	888	1,057	1,721	869	.....
England.																								
(London (Woking).....)	.....	3	10	13	28	46	54	99	104	101	125	150	137	173	240	240	301	273	275	*301	358	347	140	.....
Manchester.....	.....	.....	.....	.....	.....	.....	.....	.....	3	20	47	58	52	51	62	88	84	96	81	86	.....	97	90	.....
Glasgow.....	.....	.....	.....	.....	.....	.....	.....	Glasgow.....	.....	.....	.....	1	10	16	12	16	20	18	20	24	20	35	45	30
Liverpool.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7	23	23	40	9	40	54	38	40	35	46	34
Total.....	.....	3	10	13	28	46	54	99	107	121	172	209	206	263	337	384	414	427	430	449	418	514	321	64
Sweden.																								
(Stockholm.....)	.....	.....	.....	13	23	46	27	43	41	51	42	31	47	54	49	54	54	46	46	48	49	.....	.....	.....
Gottenberg.....	.....	.....	.....	.....	.....	.....	11	9	11	12	7	3	14	19	24	21	16	16	20	19	18	21	14	28
Total.....	.....	.....	.....	13	23	46	38	57	52	63	49	34	61	73	73	75	70	62	66	67	67	21	14	28

Paris.....	749	3,388	3,741	3,974	3,911	3,992	4,180	4,423	4,197	4,513	4,554	5,825	†310	300	270	354	352	371	....
Rouen.....												5	4	1	6	7	4	4	14
France. Total.....	749	3,388	3,741	3,974	3,911	3,992	4,180	4,423	4,197	4,513	4,559	5,829	311	306	277	358	356	385	....
Zurich.....	21	32	39	39	41	40	44	64	69	82	81	116	126	159	158	209	273	298	363
Basil.....										17	14	20	17	30	30	36	43	44	72
Switzerland. Total.....	21	32	39	39	41	40	44	64	69	99	95	136	143	189	188	245	316	340	435
Denmark. Copenhagen.....					4	12	18	21	14	18	28	28	34	44	51	47	73	....	....

* Working 140 and Golder's Green 298 (now called the London Cremation Co., Ltd.).

† The Crematorium is in operation.

‡ The Crematorium is in operation.
 † The Crematorium Society of England (324 Regent St., London) has furnished the following information: Total number of cremations in Hull 29, Darlington 36, Leicester 52, Birmingham 100, Leeds 16, Bradford 13, and Sheffield 18.

Table XXXI. — Summary of Cremations in Italian Cities.

* Cities.	Date of Inauguration.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.
ITALY.																																	
Milan.....	1876	2	9	14	25	40	70	67	44	61	70	61	55	76	85	72	65	66	74	72	64	65	104	92	99	92	107	107	92	89	122	107	
Lodi.....	1877		6	2	2	5	5	2	2	2	1	4	1	3	3	3	3	1	3	1	1						1						
Rome.....	1883								15	29	43	32	33	59	90	74	47	75	55	61	54	49	37	29	55	52	22	61	65	65	71		
Cremona.....	"								4	15	5	25	9	10	10	5	8	4	3	4	7	3	3	2	3	6	3	1	4	4	3	3	
Brescia.....	"								5	2	2	5	4	3	2	2	4	1	1	3	2	1	3	3	3	2	1	3	3	5	6	3	
Iadue.....	1884									4	5	5	4	7	5	6	4	3	8	3	3	4	2	3	4								
Udine.....	"								2	4	5		4	2	3	2	6	2	2	2	1	1	3	2	6	2		7	6	4	2		
Varese.....	"								1	1	1	5		5		1	2	1		1	3	3	2	2									
Spezia.....	1885										1	2															5		3				
Novara.....	"										1	2	2	1	3	1		7	1	3	1	1	1	2	4								
Florence.....	"										14	16	26	18	21	20	16	24	18	19	24	11	14	13	14	17	20	20	24	18	33	27	37
Livorno.....	"										8	13	20	10	20	26	9	16	16	11	9	24	9	13	13	14	22	25	19				
Asti.....	"										1		4	3	3	2	3	4		2		1		4	1								
Piss.....	"										8	3	1	3	2	8	1	7	6	7	3	1	2	2	6	10	4	13	13	8	16	20	
Alexandria.....	1886											1		1																			
Como.....	"											5	2	2	3	1	2	2	2		1	1	3	2	1	1		1		1			
Turin.....	1887												1	18	12	10	28	14	22	21	11	22	17	28	14	19	23	17	24	30	36	31	33

Mantua.....	1	1	2	1	3	4	8	3	4	...	3	2	4	1	5	4	3	8	...	...	...									
Sea Remo.....	1888																																
Verona.....	"																																
Bologna.....	1889																																
Modeno.....	1890																																
Venice.....	1891																																
Spoleto.....	1894																																
Perugia.....	1895																																
Sienna.....	"																																
Bera.....	1897																																
Total.....		2	15	16	27	45	75	69	70	116	164	180	168	227	282	258	221	262	246	228	220	219	242	241	265	262	258	289	805	179	337	228	138

* Lodovico Forresti Statistica delle, Cremazioni esequia in Europa Nel Sicolo XIX., 1876-1900. Edita a cura della Società di Cremazioni in Bologna.

Table XXXII. — Supplemental Summary of Crematories and Cremations in United States and Other Foreign Cities.

CREMATORIES.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.
Denver, Col.																		48	61	57	75
Oakland, Cal.																160	311	352	456	557	676
Cleveland, Ohio.															38	42	63	75	65	97	125
Montreal, B. P.																3	5	17	19	19	27
Eisenach, Germany . . .																17	43	57	79	.....	.....
Karlsruhe, "	46	94	.....	.....
Mannheim, "															20	42	52	74	110	115	136
Maintz, "																	90	156	194	219	.....

Table XXXIII. — Comparative Death-rates per 10,000 Inhabitants from Pulmonary Tuberculosis in some American and Foreign Cities for Ten Years, 1898-1907, inclusive.*

YEARS.	Boston, Mass.	Philadelphia, Pa.	New York, N. Y. (old city).	Chicago, Ill.	Brooklyn, N. Y. (old city).	St. Louis, Mo.	London, England.	Paris, France.	Berlin, Germany.	Vienna, Austria.	Glasgow, Scotland.	Liverpool, England.
1898.....	22.90	20.88	25.08	14.64	21.86	16.07	17.68	38.43	20.99	35.40	19.38	18.08
1899.....	22.27	22.23	26.00	12.90	21.90	17.04	18.88	39.40	22.42	38.67	19.67	19.64
1900.....	25.08	21.00	25.69	15.30	20.90	17.49	17.50	40.10	24.52	38.46	19.08	19.25
1901.....	23.71	22.29	24.97	14.19	20.46	18.86	18.18	40.51	21.93	36.23	18.55	18.97
1902.....	21.70	21.07	22.87	14.04	18.78	18.21	16.64	42.55	20.41	34.40	16.72	18.93
1903.....	21.10	22.14	24.07	14.26	18.55	17.46	15.22	38.93	19.31	34.14	15.82	17.55
1904.....	21.76	22.06	24.66	16.20	19.73	19.39	16.55	38.36	19.95	31.44	16.17	17.72
1905.....	20.56	19.73	23.75	16.09	17.76	18.35	14.53	.....	21.49	33.32	13.94	15.93
1906.....	19.67	21.77	23.94	15.73	16.07	18.52	14.78	37.58	.....	.....	15.50	15.84
1907.....	18.42	21.03	23.73	16.49	17.37	15.62	13.98	.....	19.30	.....	15.50	14.97

* The death-rates were calculated on the official figures sent from the above cities.

PAVING AND DRAINING ALLEYWAYS.

Acting under the provisions of chapter 119 of the Acts of 1894, the Board of Health has continued to select and require the paving and draining of such private alleyways and yards as are found on personal examination to be usually muddy, filthy, offensive to sight and smell, and which can be put and kept in a sanitary condition only by suitable paving and draining. Following is an account of the places and areas which have been thus dealt with during the past year, and which is done by and at the expense of the abutters:

Passageway at 10 Call street.
 Passageway at 8 Call street.
 Passageway, Tremont street, between Village and Albion streets.
 Passageway at Chickering place.
 Yard at 10 Call street.
 Yard at 8 Call street.
 Yard at 57 North Russell street.
 Pavement at 36 Staniford street.
 Alley at 53 North Russell street.
 Alley at 55 North Russell street.
 Yard at 53 North Russell street.
 Yard at 55 North Russell street.
 Alley between Commonwealth avenue and Dartmouth street.
 Number of square feet of concrete laid . . . 2,338
 Number of square feet of granolithic laid . . . 548
 Number of square feet of brick laid . . . 5,522

NUISANCES ABATED.

The following table shows the number of nuisances abated by owners or occupants of premises, upon notice from the Board of Health:

1907.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
House drains repaired..	73	49	52	72	76	65	51	36	25	34	38	30	601
Vaults cleaned.....	3	1	1	.....	14	2	9	1	4	2	2	...	39
Traps supplied.....	10	6	9	22	18	15	10	7	6	22	11	12	143
Yards cleaned.....	106	12	685	860	111	72	130	13	115	118	115	66	2,403
Cellars cleaned.....	93	88	266	158	80	97	174	72	49	74	80	46	1,277
Cesspools cleaned.....	7	4	5	15	28	4	11	8	7	9	10	8	116
Water-closets cleaned and repaired.....	130	115	120	128	117	117	51	50	53	106	59	43	1,089
Supply pipes repaired..	24	22	17	13	15	8	19	9	8	7	1	5	148
General cleaning and repairs.....	9	6	13	25	22	24	2	2	6	12	10	9	140
Dark rooms corrected.	6	3	2	1	4	1	3	5	2	1	11	3	42
Dark and unventilated water-closets reme- died	20	9	27	13	18	5	2	10	11	80	20	16	231
Exposed manure re- moved.....	3	5	5	3	5	...	4	1	4	2	4	11	47
Passageways cleaned..	26	9	291	198	99	50	32	40	52	60	34	30	921
Sheds cleaned.....	2	...	13	16	7	1	6	9	2	4	4	...	64
Tenements white- washed.....	32	31	62	40	58	86	36	30	26	18	29	27	475
Stables cleaned.....	117	139	149	164	198	106	49	70	127	140	118	141	1,518
Sundry nuisances abated.....	83	54	98	102	66	87	56	63	60	82	93	59	903
Rain conductors repaired.....	6	4	3	11	13	5	4	3	9	16	8	8	90
Roofs repaired.....	9	12	11	21	20	36	3	6	4	4	13	9	148
Receptacles provided for garbage.....	72	18	238	356	19	18	35	47	23	34	56	15	931
Filthy and uncovered receptacles.....	16	2	38	98	40	44	63	41	49	35	17	14	457
Vacant lot containing stagnant water.....	4	3	2	14	10	4	6	5	10	13	11	6	88
Lots cleaned.....	4	1	25	51	35	8	12	11	5	2	6	5	165
Overcrowded rooms relieved.....	4	10	4	1	1	1	2	3	...	...	...	5	31
Gas pipes repaired.....	16	6	12	36	39	14	21	20	28	7	10	6	215
Total.....	875	609	2,148	2,418	1,113	870	791	562	685	882	760	574	12,287

Formaldehyde.....	5,300 pounds.
Alcohol (for heat).....	3,200 pounds.
Chloride of Lime.....	48,000 pounds.
Bichloride of Mercury.....	950 pounds.
Chloride of Sodium (in mixing).....	525 pounds.

MONTHLY REPORT OF DISINFECTION.

Annual report for 1907 :

Diphtheria	2,141
Scarlet fever	2,109
Phthisis	1,512
Smallpox	5
Cancer	17
Typhoid fever	422
Glanders	136
Infected bedding, etc. Lots	69
Infected books, etc. Lots	352
Infected clothing, etc. Lots	26
Infected carriages	13
Infected schools	15

Total	<u>6,817</u>
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Rooms disinfected	10,613
Streets	222
Places	333
Courts	357
Alleys	1,617
Passageways	1,834
Yards	4,715
Cellars	5,888
Gutters	4,002
Water-closets	9,398
Urinals	4
Vacant lots	102
Filthy rooms	2,285
Filthy sheds	4,040
Sinks	9,400
Cesspools	5,558

Total	<u>49,755</u>
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CONTAGIOUS DISEASES.

SMALLPOX.

The highest death rate from this disease in each ten thousand inhabitants in Boston occurred in 1873, when it amounted to 27.77.

From 1870 to 1875 the death rate averaged	7.05
From 1840 to 1870 the death rate averaged	3.85
From 1875 to 1905 the death rate averaged . . . . .	.22

There were no deaths in 1906 or 1907.

DIPHTHERIA.

The average death rate from diphtheria per 10,000 of population for ten years ending 1905 was	5.48
The rate for 1906 was	2.52
The rate for 1907 was	2.36

SCARLET FEVER.

The outbreak of scarlet fever which appeared on January 9, 1907, continued into the present fiscal year, an account of which is given in the following report of Dr. S. Ayers, the attending physician. The average annual death rate from scarlet fever for each ten thousand of the population for ten years, 1896-1905, was 1.78. The rate for 1906 was 0.65 and for 1907 0.80.

Boston, July 12, 1907.

To the Board of Health :

GENTLEMEN,—Thinking that a brief summary of the work done at the Detention Hospital, Southampton street, for the Board of Health from January 14 to June 13 might prove of interest, I accordingly submit the following report (see list of cases):

There were treated in all 173 cases of scarlet fever, which cases were complicated as follows :

Measles, 10 cases, the first one occurring on May 2, coming to the hospital from one of the ocean steamships. All made good recoveries.

Pertussis broke out among the patients a few weeks after the hospital opened, there being in all nine cases.

Three cases of acute rheumatism made good recoveries, as also did four of acute nephritis, the urine being normal in all at time of discharge.

There were three cases of peritonsillar abscess, all of which were opened and pus evacuated with quick recovery.

The two fatal cases of broncho-pneumonia were both complicated by profound streptococcic infection. One was a girl, aged two and a half years, in which abscesses were opened in neck, wrist and ankle; the other, a boy four and a half years old, in which the streptococcic membrane extended down the trachea from the pharynx to such an extent that intubation was futile.

The case of acute lobar pneumonia was in a child one and a half years old. This case was complicated also with measles, otitis media, mastoiditis and whooping cough. The child recovered.

There were three cases of diphtheria, one of which, a young woman nineteen years old, was very severe. The other two were light, but were a long time showing two negative cultures from throat and nose.

Of the seven cases of endocarditis only one showed signs at time of discharge, this being in a girl eleven years old, who undoubtedly had valvular lesions present before contracting scarlet fever.

There were 29 cases of double otitis media and 40 cases affecting only one ear. These cases made much more work than any other complication, on account of the necessary daily inspection, wiping out, douching, etc. Paracentesis was performed in about half of the cases, the remainder rupturing spontaneously. The results were practically the same.

In the cases of cervical adenitis with suppuration, eight in number, incision with curetting of cavity under ether was performed as soon as fluctuation was detected. Results were uniformly good. The 52 cases, non-suppurating in character, subsided under the constant application of the ice bag.

The fatal case of erysipelas was in a boy, eleven years old, complicated by acute nephritis. The other case of erysipelas was of a mild character.

The case of mastoiditis with operation, spoken of above, occurred in the little boy, one and a half years old, who had already gone through acute lobar pneumonia and measles in addition to his scarlet fever. He was progressing favorably when he was discharged to Gallop's Island at the closing of the hospital.

The average duration of stay in the hospital was about seven weeks.

Death rate, 1.73 per cent.

I desire to express my appreciation of the careful manner in which the work performed by Mrs. Jameson, the house officers and nurses was done, it being largely, in my opinion, through their painstaking care that the good results were obtained.

Personally, I found the work extremely interesting, and, desiring to again thank you for having selected me for the position, I trust that the management of the hospital will have been considered favorably by your Board.

SILAS HIBBARD AYER, M.D.,
Visiting Physician.

DISEASE.										Number of Cases.
Scarlet fever . . . . .	.	.	.	.	.	.	.	.	.	173
Measles . . . . .	.	.	.	.	.	.	.	.	.	10
Pertussis . . . . .	.	.	.	.	.	.	.	.	.	9
Acute rheumatism . . . . .	.	.	.	.	.	.	.	.	.	3
Acute nephritis . . . . .	.	.	.	.	.	.	.	.	.	4
Peritonsillar abscess . . . . .	.	.	.	.	.	.	.	.	.	3

	Number of Cases.
Broncho-pneumonia	2
Lobar-pneumonia	1
Diphtheria	3
Endocarditis	7
Acute otitis media (double)	29
“ “ (single)	40
Cervical adenitis (suppurating)	8
“ (non-suppurating)	52
Erysipelas	2
Mastoiditis with operation	1
Number of deaths	3

CONSUMPTION.

The death rate from consumption in Boston has steadily decreased for many years, and particularly so during the last twenty years. Our highest recorded death rate from this disease in Boston occurred in 1853, when it amounted to 48.16 in each ten thousand of the population, and the average rate from 1850 to 1855 was 47.36.

The average death rate from 1880 to 1885 was	40.91
The average death rate from 1885 to 1890 was	35.44
The average death rate from 1890 to 1895 was	28.88
The average death rate from 1895 to 1900 was	24.05
The average death rate from 1900 to 1905 was	21.75
The death rate for 1906 was	19.67
The death rate for 1907 was	18.42

TYPHOID FEVER.

The highest death rate from typhoid fever in Boston in each ten thousand of the population occurred in 1872, when it amounted to 8.62.

The average from 1870 to 1875 was	7.09
The average from 1875 to 1880 was	3.92
The average from 1880 to 1885 was	5.19
The average from 1885 to 1890 was	3.91
The average from 1890 to 1895 was	3.11
The average from 1895 to 1900 was	3.06
The average from 1900 to 1905 was	2.44
The rate for 1906 was	2.02
The rate for 1907 was	1.05

MEASLES.

The highest death rate per ten thousand of the inhabitants in Boston occurred in 1849, when it amounted to 15.83, and for the period between 1845 and 1850 it was 7.29.

From 1880 to 1885 it was	2.01
From 1885 to 1890 it was	1.17
From 1890 to 1895 it was . . . . .	.39
From 1895 to 1900 it was . . . . .	.72
From 1900 to 1905 it was	1.24
The rate for 1906 was	1.01
The rate for 1907 was . . . . .	.47

RABIES.

The Board of Health is of the opinion that all unlicensed dogs should be disposed of, and that all other dogs should either be properly muzzled or otherwise so restrained as to secure the safety of the people against the bite of the rabid dog.

The Board of Health would recommend such muzzling or restraint for a period of not less than one year.

The following communication was sent to the Mayor concerning the restriction of dogs, because of the prevalence of rabies in this State and its recent appearance in the city:

Boston, April 5, 1907.

HON. JOHN F. FITZGERALD,
Mayor of Boston:

DEAR SIR, — Inasmuch as the order of the Board of Aldermen for muzzling or restraining dogs in Boston for a period of three months expired yesterday, the Board of Health desires to respectfully state that there have been eight cases of rabies among dogs in Boston in January, ten in February and six in March, with two more cases now under examination. There has also been one death from this disease in a child, April 1st.

Under these circumstances the Board of Health would fail in its duty if it did not earnestly recommend that all dogs in Boston be restrained from running at large for the next three months, that is, they should not be allowed off the owner's premises, except on leash and in charge of a responsible person.

Yours very truly,

S. H. DURGIN,
Chairman.

[CHAPTER 164.]

COMMONWEALTH OF MASSACHUSETTS.

IN THE YEAR ONE THOUSAND NINE HUNDRED AND SEVEN.

AN ACT TO PROVIDE FOR THE KEEPING OF MEDICAL AND SUR-
GICAL APPLIANCES IN FACTORIES.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

SECTION 1. Every person, firm or corporation operating a factory or shop in which machinery is used for any manufacturing purpose, or for any other purpose except for elevators, or for heating or hoisting apparatus, shall at all times keep and maintain, free of expense to the employees, such a medical and surgical chest as shall be required by the local board of health of any city or town where such machinery is used, containing plasters, bandages, absorbent cotton, gauze, and all other necessary medicines, instruments and other appliances for the treatment of persons injured or taken ill upon the premises.

SECT. 2. Any person, firm or corporation violating this act shall be subject to a fine of not less than five dollars nor more than five hundred dollars for every week during which such violation continues.

[Approved March 1, 1907.]

In accordance with the provisions of the foregoing act the Board voted, August 2, 1907, that the following list of medical and surgical appliances shall be required to be maintained in factories and shops in Boston:

- 2 elastic tourniquets (minimum, 24 inches).
- 2 rolls $\frac{1}{2}$ -inch zinc ox. adhesive plaster.
- 2 rolls 2-inch adhesive plaster.
- 4 dozen gauze bandages, assorted sizes, from 1 to 4 inches.
- 1 pound absorbent cotton.
- 1 yard sterile gauze.
- 1 dozen emergency slings.
- 5 yards Canton flannel (used with Carron oil for burns).
- 1 pair scissors, straight ($2\frac{1}{2}$ -inch blade).
- 500 tablets $1\frac{1}{2}$ grains corrosive sublimate and citric acid.
- 6 whitewood strips, 40 by 4 by $\frac{3}{16}$.
- 2 pillows.
- 1 package of pins.
- 3 dozen safety pins.
- 8 ounces spirits ammonia aromatic (rubber stopple).
- 1 gallon Carron oil.
- 1 pint brandy.
- 1 basin.

On the second of January, 1908, the Board amended its order of August, 1907, by substituting the following list for small factories and shops:

For persons, firms or corporations operating factories or shops with not exceeding ten employees, the following medical and surgical chest shall be regarded as sufficient.

- 1 roll $\frac{1}{2}$ -inch zinc ox. adhesive plaster.
- 1 roll 2-inch adhesive plaster.
- 2 dozen gauze bandages, assorted sizes, from 1 to 4 inches.
- 1 pound absorbent cotton.
- $\frac{1}{2}$ dozen emergency slings.
- 5 yards Canton flannel (used with Carron oil for burns).
- 1 pair scissors, straight ($2\frac{1}{2}$ -inch blade).
- 100 tablets $1\frac{1}{4}$ grains corrosive sublimate and citric acid.
- 1 package of pins.
- 3 dozen safety pins.
- 8 ounces spirits ammonia aromatic (rubber stopple).
- $\frac{1}{2}$ gallon Carron oil.
- $\frac{1}{2}$ pint of brandy.
- 1 enamelled basin.

PAVING AND DRAINING ALLEYS.

The following is a list of the alleys and places which have been paved and drained during the year by order of the Board of Health at the expense of the abutters:

Chickering place, Rear 14-26 Dover street.
Norfolk place,

REMOVAL OF BUILDINGS.

By reason of a lack of funds the Board of Health was obliged to abridge its operations in the condemnation and removal of old buildings, under authority given in chapter 219, Acts of 1897, during the last year. The whole number removed for the year ending January 31, 1907, was four.

The following is a list of the streets and wards where this work has been done during the year:

27 Athens street	Ward 13
656 Dorchester avenue	Ward 16
676 Dorchester avenue	Ward 16
672 Dorchester avenue	Ward 16

EXAMINATION OF PLUMBERS.

During the past year weekly examinations have been held by the Board of Examiners of Plumbers, with the following results:

Number of applicants examined by the Board	222
Masters	66
Journeyman	156
Number of applicants certified for master's licenses	5
Number refused	61
Number of applicants certified for journeyman's licenses,	51
Number refused	105

MILK AT ABATTOIR.

July 19, 1907.

Whereas, the Board of Health (August 31, 1900) ordered that all milk produced at the stock yards in Brighton from cows held there for sale be wasted into the public sewer, it was voted that in consideration of the New England Dressed Meat and Wool Company's agreement that all milk produced as above shall hereafter be fed to pigs and used in no other way, the Board hereby revokes the said order in the premises to the extent of permitting said milk to be fed to pigs.

APPOINTMENTS.

May 8. The Board organized by the choice of Samuel H. Durgin, M.D., as chairman, and John J. Douglass, secretary.

May 8. Charles E. Davis, Jr., was appointed chief clerk.

February 12. The Board established a division of the department to be known as the "Tenement house division," and Edward E. Brown was appointed to have charge of such division at an annual salary of \$2,500.

June 29. At request of His Honor the Mayor, the Board established a division of the department to include all matters pertaining to plumbing, to be known as the "Plumbing division," and Daniel J. Kinnally was appointed to have charge of such division at an annual salary of \$2,500.

January 9, 1908. The Board abolished the divisions of "plumbing" and "tenement houses," and the services of Messrs. Edward E. Brown and Daniel J. Kinnally were dispensed with.

January 23. Charles E. Davis, Jr., was reappointed secretary of the Board in place of John J. Douglass, whose services were discontinued; Mr. Davis to perform the duties of secretary to the Board in addition to his duties as chief clerk without extra compensation.

SAMUEL H. DURGIN, M.D., *Chairman*.

MICHAEL NORRIS.

WILLIAM HAYES.

FINANCIAL STATEMENT.

EXPENDED TO JANUARY 31, 1908.

Board of Health :		
Two commissioners	\$8,000 00	
One chairman	4,500 00	
	<hr/>	\$12,500 00
Clerk-hire		12,627 06
Messenger service, salary of messenger and extra service		757 78
Sanitary inspectors, including one inspector of gas fixtures and five police officers		33,688 04
Medical inspectors, including one veterinarian		13,100 00
Constables		1,924 80
Inspector of provisions and of animals intended for slaughter		1,418 22
Smoke inspectors		1,963 76
Disinfection :		
Labor	\$13,670 01	
Expense of horses and vehicles	2,792 22	
Other expenses	746 23	
	<hr/>	17,208 46
Smallpox Hospital :		
Labor	\$976 43	
Subsistence	454 28	
Fuel	595 60	
Repairs	114 04	
Other expenses	1,115 40	
	<hr/>	3,255 75
Medical inspection of schools :		
Eighty inspectors (annual salary, \$200)		15,993 33
Care of scarlet fever at Southampton Street Hospital		18,601 26
Vaccination :		
Services of physicians	\$30 00	
Material	9 10	
	<hr/>	39 10
Laboratory :		
Salaries	\$8,367 00	
Materials	2,328 96	
Other expenses	1,863 18	
	<hr/>	12,559 14
Supplies for sanitary inspectors		501 89
	<hr/>	
Carried forward		\$146,138 59

HEALTH DEPARTMENT.

49

<i>Brought forward</i>		\$146,138 59	
Morgue :			
Salaries	\$1,142 65		
Alterations and repairs	5,753 71		
Other expenses	1,909 27		
			8,805 63
Postage			2,758 24
Telephones			1,332 78
Travelling expenses — officers			1,894 35
Office expenses			1,540 22
Horses and vehicles :			
Board	\$1,385 71		
Shoeing	192 96		
Repairs	159 55		
New buggy and sleigh	350 00		
			2,088 22
Stationery			829 56
Printing			3,750 49
Advertising			30 61
Examination of plumbers and gasfitters			480 23
Inspection of milk and vinegar :			
Salaries	\$9,309 50		
Horse and vehicle	419 30		
Supplies	1,374 01		
			11,102 81
Inspection of provisions :			
Paid for salaries			3,688 88
Superintendent of pedlers	\$1,300 00		
Assistant superintendent of pedlers (per day), \$3	1,088 36		
			2,388 36
Removal of buildings			9,582 28
Towns and cities for care of patients sick with contagious diseases, having a settlement in Boston			4,028 78
Tenement house division			2,194 44
Plumbing division			1,250 00
Sundry expenses			382 12
<i>Quarantine.</i>			
Port physician and assistant, salaries			2,734 69
Vaccination			40 80
Medicine			678 89
Contingencies			357 51
Gallop's Island :			
Labor	\$7,032 57		
Subsistence	4,036 61		
Fuel	1,204 70		
<i>Carried forward</i>	\$12,273 88	\$208,078 48	

<i>Brought forward</i>	\$12,273 88	\$208,078 48
Repairs	2,367 44	
Supplies	3,635 06	
	<hr/>	18,276 38
Steamer "Vigilant" :		
Salaries	\$7,337 34	
Subsistence	1,919 94	
Repairs	2,613 49	
Supplies	144 38	
Fuel	1,900 00	
	<hr/>	13,915 15
Steamer "Relief," repairs		609 90
Total		<hr/> <u>\$240,879 91</u>

INCOME.

Quarantine (incoming vessels)	\$5,184 00
Inspection of milk and vinegar (licenses)	726 50
Smallpox (care of patients)	332 84
Leprosy (care of patients)	180 00
	<hr/>
Total	<u>\$6,423 34</u>

REPORT OF CHIEF MEDICAL INSPECTOR.

To the Board of Health :

I have the honor to submit the following report for the year ending December 31, 1907:

INFECTIOUS DISEASES.

Variola. — There were six cases reported and no deaths.

Diphtheria. — There were two thousand three hundred and sixty-six (2,366) cases reported; one thousand three hundred and twenty-two (1,322) of these were cared for at the South Department of the City Hospital, 55.88 per cent. There were one hundred and forty-four (144) deaths. Mortality, 6 per cent.

Scarlet Fever. — There were two thousand three hundred and fifty-nine cases reported; eleven hundred and eighty-nine of these were cared for at the South Department of the City Hospital, 50.40 per cent. There were forty-nine (49) deaths. Mortality, 2 per cent.

Measles. — There were one thousand three hundred and forty-eight (1,348) cases reported and twenty-nine (29) deaths. Mortality, 2 per cent.

Typhoid Fever. — There were five hundred and seventy-nine (579) cases reported; three hundred and eighty-seven (387) were cared for at the different hospitals in this city. There were sixty-four (64) deaths. Mortality, 11 per cent.

Tuberculosis. — There were two thousand five hundred and forty-three (2,543) cases reported. There were eleven hundred and twenty-two (1,122) deaths.

Leprosy. — There were four cases of leprosy reported.

During the past year four hundred and fifty-three persons died without a physician in attendance, and were reported to this office. In all these cases a personal visit was made, the body examined, and a probable diagnosis made before granting permit for burial. Twenty cases were referred to the medical examiner for investigation.

A tabular statement of the cases investigated is appended.

Tabular Statement of the Cause of Deaths Investigated by the Medical Inspectors for the Year ending December 31, 1907.

BERTILLON CLASSIFICATION.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
I. General Diseases.													
Tuberculosis of lungs.....	1	3	2	2	...	1	2	2	1	5	2	3	24
Cancer of breast.....	1	...	...	1	...	...	...	...	...	...	...	...	2
Cancer of uterus.....	...	...	...	...	...	...	...	1	...	...	...	...	1
" others.....	...	...	...	1	1	...	...	1	1	2	...	...	6
Diabetes.....	2	...	...	...	...	...	...	1	...	...	...	...	3
Pernicious anæmia.....	...	...	...	...	...	...	1	...	...	1	...	1	3
Rheumatism.....	...	2	...	...	...	...	...	...	...	...	...	...	2
Whooping-cough.....	...	2	...	...	...	...	1	...	...	...	...	...	3
Erysipelas.....	...	...	1	...	...	...	...	...	...	...	...	...	1
Septicæmia.....	...	...	...	...	...	...	...	...	1	...	...	...	1
Gon. ophthalmia.....	...	...	...	...	...	...	...	...	...	...	...	1	1
Total from general diseases.....	4	7	3	4	1	1	4	5	3	8	2	5	47
II. Diseases of the Nervous System and of the Organs of Sense.													
Simple meningitis.....	1	...	...	...	...	...	...	...	...	...	...	...	1
Cerebral hemorrhage and congestion.....	3	3	2	2	2	2	1	2	1	1	...	2	21
Convulsions of infants....	3	3	1	2	1	...	...	2	1	3	...	...	16
Epilepsy.....	...	...	1	...	2	...	1	...	1	...	...	1	6
Locomotor ataxia.....	...	...	...	1	...	...	...	...	...	...	1	...	2
Paralysis.....	...	...	...	...	...	...	...	...	...	...	...	1	1
Other diseases of the nervous system.....	...	...	...	...	...	1	1	...	...	...	...	...	2
Total of the nervous system.....	7	6	4	5	5	3	3	4	3	4	1	4	49
III. Diseases of the Circulatory System.													
Organic diseases of the heart.....	18	8	9	8	3	4	7	10	4	10	6	7	94
Hemorrhage.....	...	1	3	...	...	...	...	...	...	...	...	...	4
Endocarditis.....	...	...	...	1	...	...	...	...	...	...	...	...	1
Angina pectoris.....	1	...	...	...	...	...	...	...	...	...	...	...	1
Total of the circulatory system.....	19	9	12	9	3	4	7	10	4	10	6	7	100
<i>Carried forward.....</i>	30	22	19	18	9	8	14	19	10	22	9	16	196

STATEMENT OF THE CAUSE OF DEATHS.—*Continued.*

BERTILLON CLASSIFICATION.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
<i>Brought forward</i>	30	22	19	18	9	8	14	19	10	22	9	16	196
IV. Diseases of the Res- piratory System.													
Acute bronchitis.....	4	1	3	1	.....	.....	1	.....	1	1	2	1	15
Chronic bronchitis.....	.....	.....	1	1	.....	.....	.....	.....	1	1	.....	2	6
Pneumonia.....	4	6	8	3	2	.....	.....	.....	1	1	3	5	33
Broncho pneumonia.....	2	2	1	.....	.....	1	.....	.....	.....	3	.....	.....	9
Pul. hemorrhage.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1
Asthma.....	.....	.....	1	1	1	.....	.....	.....	.....	.....	.....	.....	3
Total of the respiratory system.....	10	9	14	6	3	1	2	.....	3	6	5	8	67
V. Diseases of the Dige- stive System.													
Infantile diarrhœa and athrepsia.....	.....	1	.....	.....	1	2	4	9	6	2	1	2	28
Gastritis.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1
Total of the digestive system.....	.....	1	.....	.....	1	2	4	10	6	2	1	2	29
VI. Diseases of the Genito Urinary System and Adnexa.													
Acute nephritis.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1
Bright's disease.....	.....	1	1	.....	.....	.....	.....	2	2	1	2	.....	9
Uterine fibroid.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1
Total of the genito-uri- nary system.....	.....	1	1	.....	.....	.....	.....	2	2	2	2	1	11
VII. Puerperal State.													
Post partum hemorrhage..	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
Total from puerperal state.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
No deaths were examined in the classifications of VIII., IX. and X.													
XI. Infantile.													
Congenital debility, icterus and scleroma.....	7	4	1	4	4	3	4	4	4	8	6	7	56
Total infantile.....	7	4	1	4	4	3	4	4	4	8	6	7	59
<i>Carried forward</i>	48	37	35	28	17	14	24	35	25	40	23	34	360

STATEMENT OF THE CAUSE OF DEATHS. — *Concluded.*

BERTILLON CLASSIFICATION.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
<i>Brought forward.....</i>	48	37	35	28	17	14	24	35	25	40	23	34	360
XII. Old Age.													
Senile debility.....	6	1	2	1	1	1	2	4	1	2	....	4	25
Total from old age.....	6	1	2	1	1	1	2	4	1	2	....	4	25
XIII. External Violence.													
Other accidental injuries..	....	....	2	....	1	....	....	....	....	....	....	....	3
Heat prostration.....	....	....	....	....	....	3	....	....	....	....	....	....	3
Total from external violence.....	....	....	2	....	1	3	....	....	....	....	....	....	6
XIV. Ill-Defined Disease.													
Unknown or not specified diseases.....	1	3	5	5	3	2	....	1	1	1	2	....	24
Total ill-defined diseases.	1	3	5	5	3	2	....	1	1	1	2	....	24
Still-births.....	....	....	....	2	3	3	2	....	3	1	2	2	18
Referred to medical examiner.....	5	1	....	....	2	3	2	2	2	1	1	1	20
Total.....	60	42	44	36	27	26	30	42	32	45	28	41	453

Respectfully submitted,

THOMAS B. SHEA, M.D.,
Chief Medical Inspector.

REPORT OF GEORGE A. SARGENT, M.D.

JANUARY 1, 1908.

To the Board of Health:

GENTLEMEN, — I have the honor of submitting the following report:

At the vaccinating station on Chardon street during the past year there were scarified for primary vaccination 2,055 individuals. The vaccination in each of these was successful, so far as I am aware. Unfortunately, many do not return to the station for their certificates of vaccination. In every instance, however, where these primary cases returned to the office a certificate was issued. Twelve persons who previously had been successfully vaccinated applied for revaccination.

The Suffolk County Jail has been visited daily. At this institution 2,621 cases were treated, the number of visits required being 5,882. A list of the cases treated at the jail is appended.

The Chardon-street Home has been visited.

Respectfully submitted,

GEORGE A. SARGENT, M.D.

Tabular Statement of the Diseases Treated at Suffolk County Jail for the Year ending December 31, 1907.

DISEASES.	Remaining, Jan. 1, 1907.	Treated during the Year.	Recovered.	Improved.	Sent to Hospital.	Sent to Isane Hospital.	Discharged from Custody.	Died.	Remaining, Dec. 31, 1907.
General Diseases:									
Cold.....		148	148						
Debility.....		16		16					
Fever, intermittent.....		2	2						
Phthisis.....		5					5		
Rheumatism.....		131	131						
<i>Carried forward</i>		302	281	16			5		

STATEMENT OF THE DISEASES TREATED. — *Continued.*

DISEASES.	Remaining, Jan. 1, 1907.	Treated during the Year.	Recovered.	Improved.	Sent to Hospital.	Sent to Insane Hospital.	Discharged from Custody.	Died.	Remaining, Dec. 31, 1907.
<i>Brought forward</i>		302	281	16			5		
Diseases of the Nervous System:									
Delirium tremens.....		110	110						
Epilepsy.....		2					2		
Neuralgia.....		159	159						
Diseases of Intellect:									
Acute mania.....		3						3	
Dementia.....		12				12			
Diseases of Circulatory System:									
Arterio sclerosis.....		1						1	
Heart disease.....		2						2	
Exophthalmic goitre.....		1					1		
Varix.....		2		2					
Diseases involving Bronchi:									
Asthma.....		4		4					
Bronchitis.....		30	30						
Diseases of Glands:									
Adenitis.....		2		1					1
Diseases of Fauces:									
Pharyngitis.....		18	18						
Stomatitis.....		21	21						
Tonsillitis.....		12	12						
Diseases of Larynx:									
Laryngitis.....		1	1						
Diseases of the Lungs:									
Pleurisy.....		1		1					
Pneumonia.....		3	1		1			1	
Diseases of Digestive System:									
Colic.....		12	12						
Constipation.....		882	882						
Diarrhoea.....		259	259						
Indigestion.....		147		147					
Functional Diseases of Women:									
Dysmenorrhoea.....		4		4					
<i>Carried forward</i>		1,990	1,786	175	1	12	8	7	1

STATEMENT OF THE DISEASES TREATED.— *Continued.*

DISEASES.	Remaining, Jan. 1, 1907.	Treated during the Year.	Recovered.	Improved.	Sent to Hospital.	Sent to Insane Hospital.	Discharged from Custody.	Died.	Remaining, Dec. 31, 1907.
<i>Brought forward</i>	1,990	1,786	175	1	12	8	7	1	
Menorrhagia	1		1						
Metrorrhagia	2		2						
Pregnancy	1					1			
Diseases of Cutaneous System:									
Acne	2	2							
Callus	1	1							
Carbuncle	1	1							
Clavus	1	1							
Dermatitis	11	11							
Eczema	6		6						
Furuncle	4	4							
Lupus	1	1	2						
Paronychia	4	3						1	
Phthiriasis	40	40							
Psoriasis	3		3						
Scabies	65	65							
Seborrhoea	1		1						
Verruca	2	2							
Diseases of Eye:									
Conjunctivitis	30	30							
Diseases of Ear:									
Otitis	11	11							
Poisons:									
Opium habit	40	38						2	
Parasitic:									
Tænia	1	1							
Surgical Diseases:									
Abscess	18	18							
Appendicitis	1			1					
Chancroid	5					5			
Chronic ulcer	18		18						
Felon	1	1							
Gonorrhoea	3	91	40	53				1	
<i>Carried forward</i>	4	2,352	2,057	259	2	12	14	7	5

STATEMENT OF THE DISEASES TREATED. — *Concluded.*

DISEASES.	Remaining, Jan. 1, 1907.	Treated during the Year.	Recovered.	Improved.	Sent to Hospital.	Sent to Insane Hospital.	Discharged from Custody.	Died.	Remaining, Dec. 31, 1907.
<i>Brought forward</i>	4	2,352	2,057	259	2	12	14	7	5
Hæmorrhoids		9	9						
Hydrocele		2	2						
Mastitis		1	1						
Stricture		1			1				
Syphilis	2	70		69					3
Injuries:									
Abrasions		37	37						
Burns		7	7						
Contusions		9	9						
Fractures		3	3						
Frost-bites		2	2						
Sprains		18	18						
Wounds:									
Gunshot		3	2						1
Incised		17	17						
Lacerated		37	36						1
Scalp		44	44						
Total	6	2,612	2,244	328	3	12	14	7	10
Malingering		3							
Grand total	6	2,615	2,244	328	3	12	14	7	10

REPORT OF DIRECTOR OF BACTERIOLOGICAL LABORATORY.

To the Board of Health :

GENTLEMEN, — I have the honor to submit the following report for the year ending January 31, 1908:

TOTAL ROUTINE EXAMINATIONS.

The total number of routine bacteriological examinations made between February 1, 1907, and February 1, 1908, was 25,148. Of these, 20,467 were diagnoses and 4,681 were milk examinations.

With this report the laboratory completes its tenth year as a sub-department of the Board of Health. In that time it has made over 150,000 examinations, of which 100,000 were for diphtheria. The total number of routine examinations for 1907 have increased practically five times in that interval. From present indications (see Table, page 72) a steady yearly increase can be predicted.

In addition to the regular routine work the laboratory has made many analyses of food and water, and various sanitary tests, together with a considerable number of special investigations along sanitary lines made either at the direct request of the Board or resulting from the necessity of keeping abreast of the times in this particular branch of science.

We would respectfully call the attention of the Board to the fact that, notwithstanding the large increase of work above noted, but two technical men have been added to the staff since 1900.

PART I. — ROUTINE BACTERIOLOGICAL DIAGNOSES.

(A description of outfits used, technique employed and the interpretation of bacteriological findings may be found in previous annual reports.)

Table No. I. — Diphtheria.

SHOWING CULTURES CLASSIFIED.

	Positive.	Negative.	No Growth.	Total.
Primary.....	1,308	6,017	73	7,398
Secondary.....	2,123	3,712	53	5,888
Total.....	3,431 26%	9,729 73%	126 1%	13,286

The total number of diphtheria examinations increased 1,225 over the number examined during 1906. Notwithstanding the increase the percentage of positive cultures dropped from 28 to 26 per cent.

Table No. II. — Diphtheria.

SHOWING CASES CLASSIFIED.

	POSITIVE.		NEGATIVE.		NO GROWTH.	TOTAL.		TOTAL.			Grand Total.
	For Diagnosis.	For Release Only.	For Diagnosis.	For Release.	For Diagnosis Only.	For Diagnosis.	For Release Only.	Positive.	Negative.	No Growth.	
	1	2	3	4	5	6	7	8	9	10	
1907.											
February....	155	11	717	17	6	878	28	166	734	6	906
March.....	155	12	602	15	10	767	27	167	617	10	794
April.....	157	16	533	17	7	697	33	173	550	7	730
May.....	132	9	524	26	3	659	35	141	550	3	694
June.....	94	8	357	16	3	454	24	102	373	3	478
July.....	68	1	274	25	13	355	26	69	299	13	381
August.....	57	3	239	25	5	301	28	60	264	5	329
September...	68	1	182	17	3	253	18	69	199	3	271
October.....	91	8	358	25	4	453	33	99	383	4	486
November...	130	9	520	21	6	656	30	139	541	6	686
December...	143	12	696	25	5	844	37	155	721	5	881
1908.											
January.....	110	16	601	33	6	717	49	126	634	6	766
	1,360	106	5,603	262	71	7,034	368	1,466	5,865	71	7,402

Column 1 shows the whole number of persons proving positive for diagnosis. In some of these cases the first culture was negative, but subsequent cultures for diagnosis were positive. Column 2 shows the total persons positive for release only, no culture (or in very few cases a negative culture) being taken for diagnosis. Column 3 shows cases negative throughout for diagnosis. A few of these were reported as diphtheria in spite of the negative cultures, but these proved negative for release also. Column 5 shows cases on which none but no growth cultures were received.

Table No. III. — Diphtheria.

SHOWING COMPARISON OF WORK DONE IN DIFFERENT YEARS.

Actual Number of Cultures and Persons Examined.

FEB. 1 TO FEB. 1.	CULTURES.				PERSONS.				Cases Reported.
	Per Month.	For Diagnosis.	For Release.	Total.	Per Month.	Positive Diagnosis.	Negative Diagnosis.	Total Released.	
	1	2	3	4	5	6	7	8	
1898 (estimated)...	440	2,059	3,205	5,264	190	400	1,500	550	1,661
1899.....	660	4,408	3,522	7,930	380	1,019	2,920	1,002	2,836
1900 (approximate)	1,560	8,000	10,889	18,889	700	2,100	5,600	2,000	5,020
1901.....	944	6,689	4,615	11,304	544	1,176	4,679	1,249	2,906
1902.....	660	5,506	2,223	7,729	438	726	4,140	781	1,881
1903.....	732	5,659	3,122	8,780	464	922	4,149	892	2,166
1904.....	770	5,986	3,251	9,237	479	1,047	4,219	985	2,440
1905.....	631	5,167	2,164	7,331	405	688	3,781	579	1,554
1906.....	1,005	7,817	4,244	12,061	564	1,371	4,953	933	2,266
1907.....	1,107	8,297	4,989	13,286	611	1,360	5,603	932	2,366

Relative Number of Cultures and Persons Examined. (Calculated per 100 Cases Reported.)

1898.....	320	120	192	320	137	24	90	33	1,661
1899.....	280	155	124	280	160	36	103	35	2,836
1900.....	370	159	216	370	167	42	111	39	5,020
1901.....	380	230	158	380	224	40	161	42	2,906
1902.....	411	292	112	411	279	38	220	41	1,881
1903.....	405	261	144	405	257	42	191	41	2,166
1904.....	378	245	133	378	236	43	173	40	2,440
1905.....	471	332	139	471	313	44	243	37	1,554
1906.....	532	345	187	532	299	61	218	41	2,266
1907.....	562	351	211	562	310	57	237	39	2,366

With an increase of but 100 over the year 1906 in the number of cases reported to the Board, there has been an increase of 1,200 in the number of cultures submitted. The total number of cultures for diagnosis (column 3) is larger than for any previous year, outdistancing even 1900, when diphtheria was very prevalent and when the number of cases reported was over double the number for the present year.

It is evident from a critical examination of the above table that physicians are making a more general use of the laboratory, particularly for the *diagnosis* of diphtheria, indicating a more general inclination toward culture taking in cases of slight throat inflammation.

Table No. IV. — Diphtheria.

SHOWING AVERAGE LENGTH IN DAYS AND WEEKS FROM DATE OF FIRST POSITIVE TO SECOND NEGATIVE.

MONTH.	Number of Cases.	Average in Days.	Number Cases Running Less than One Week.	Number Cases Running between One and Two Weeks.	Number Cases Running between Two and Three Weeks.	Number Cases Running more than Three Weeks.
February, 1907	37	18.4	3	6	13	15
March	44	19.0	4	14	11	15
April	62	16.4	3	21	22	16
May	47	13.3	5	26	12	4
June	28	10.6	6	18	2	2
July	27	10.2	6	16	4	1
August	23	11.5	6	10	6	1
September	23	13.3	4	11	6	2
October	34	12.7	3	24	3	4
November	53	13.7	4	29	13	7
December	64	13.4	6	30	23	5
January, 1908	47	13.1	5	25	12	5
Totals	489	13.8	55 11%	230 47%	127 26%	77 16%

This table is necessarily based on those cases where cultures were submitted to the laboratory for diagnosis, the patient being also released later on by the laboratory. A large number of positive cases are removed to the City Hospital, and, being finally released from there, cannot be brought into this account.

The average duration of cases of diphtheria has dropped from 15.1 days in 1906 to 13.8 days in 1907. The number of cases running less than one week remains the same, the number running between one and two weeks has increased 9 per cent., while the number of cases running over four weeks has decreased 8 per cent. This corroborates numerous reports from the physicians that the disease has in general run a milder course.

There were but 6 cases running over five weeks. Of these one ran 44 and another 58 days.

Table No. V. — Diphtheria.

SHOWING RESULTS OF VIRULENCE TESTS.

Positive.	Negative.	Slight.	Total.
22	18	3	43
51%	42%	7%	

The above figures are included in the table of "Miscellaneous Examinations" on page 70, and in the final table under "Other Diseases."

Virulence tests are made only in cases running an abnormal length of time or in cases showing but few clinical signs.

Table No. VI. — Diphtheria.

SHOWING NEGATIVE CULTURES OBTAINED FOR RELEASE, INCLUDING PREMATURE NEGATIVES. ALL WERE RELEASED BY TWO CONSECUTIVE NEGATIVES.

MONTH.	Positive Cases Released on Two Negatives.	Positive Cases Showing Premature Negatives	Per Cent. of Positive Cases Showing Premature Negatives.
February, 1907.....	43	12	28
March.....	54	14	26
April.....	74	16	22
May.....	52	7	13
June.....	34	3	9
July.....	28	0	0
August.....	26	3	12
September.....	24	3	13
October.....	38	4	11
November.....	59	8	14
December.....	73	13	18
January, 1908.....	59	19	32
Totals.....	564	102	18

Column 1 shows total positive cases which were released by two consecutive negatives. Column 2 shows the number of these which, during the taking of cultures for release, yielded a negative culture followed by a positive.

Column 3 shows that if release were granted on one negative culture only, 18 per cent. of the total positive cases released by the laboratory would still carry the bacilli after such release.

The number of premature negatives has fallen from 34 per cent. in 1900 to 18 per cent. in 1907.

Table No. VI. — Diphtheria.

COMPARATIVE RESULTS FROM SWAB EXAMINATION AND FIVE-HOUR AND OVER-NIGHT INCUBATION RESULTS.

A.

Swab Examinations and Over-night Incubations.

	Positive Cases.	Negative Cases.
Swab+ Culture+.....	49	0
Swab? Culture+.....	48	0
Swab— Culture+.....	37	0
Swab— Culture—.....	9	271
Swab? Culture—.....	6	20
Swab+ Culture—.....	1	0
	150	291

B.

Five-hour and Over-night Incubations.

	Positive Cases.	Negative Cases.
5-hour+ 20-hour+.....	79	0
5-hour? 20-hour+.....	14	0
5-hour— 20-hour+.....	19	0
5-hour— 20-hour—.....	19	330
5-hour? 20-hour—.....	3	10
5-hour+ 20-hour—.....	0	0
	134	340

Out of 441 swabs examined, 329, or 74½ per cent., were reported as the culture proved; of the remaining 112, 48 were reported suspicious and came positive, bringing the total of reliable reports from the swab up to 85½ per cent.

In one case the swab was positive and the culture negative, succeeding cultures on the same case coming positive; here the swab having been introduced into the throat a second time for material for the examination may have reached organisms not touched in the first swabbing.

Of the 474 five-hour examinations made, 428, or 90 per cent., were reported as the twenty-hour incubation proved, the incubation in these cases being necessarily five hours longer than ordinary; 14 were reported suspicious and came positive, bringing the total of correct reports up to 93 per cent.

Of the remaining 32 examinations, 19 negative on the five-hour examination were positive after the longer incubation, 13 reported suspicious were negative, although in three of these succeeding cultures were positive, the forms noted at the five-hour examination being probably overgrown in the longer incubation.

TUBERCULOSIS.

All sputum specimens are now subjected to a vigorous shaking in a machine designed for the purpose. This results in the breaking up of coagulated masses, etc., and renders the sputum thoroughly homogeneous.*

Examination of Urines for B. Tuberculosis. — If the examination of urine for *B. tuberculosis* is desired, it is best to obtain a catheterized specimen, otherwise special precautions must be taken to prevent contamination with smegma or other foreign matter.

Usually such cases require the inoculation of guinea pigs to establish the diagnosis, and the results are then available only after six weeks have elapsed.

Table No. I. — Tuberculosis.

MONTHLY TOTALS OF EXAMINATIONS.

MONTH.	Positive.	Negative.	Total.
February, 1907.....	78	297	375
March.....	99	390	489
April.....	107	355	462
May.....	93	384	477
June.....	90	284	374
July.....	83	243	326
August.....	83	208	291
September.....	93	248	341
October.....	88	279	367
November.....	79	315	394
December.....	105	348	453
January, 1908.....	113	306	419
Total.....	1,111	3,657	4,768
	23%	77%	.....

The percentage of positive results remains exactly the same as for 1905 and 1906.

* For a description of this machine and the results obtained by its use see *Journal of Infectious Diseases*, 1907, Supplement No. 3, p. 119.

Table No. II. — Tuberculosis.

SHOWING CASES CLASSIFIED.

Positive.	Negative.	Total.
895	3,087	3,982
22%	78%	.....

Table No. III. — Tuberculosis.

SHOWING RESULTS OF GENITO-URINARY TUBERCULOSIS TESTS.

Positive.	Negative.	Unsatisfactory.	Total.
17	38	2	57
30%	66.5%	3.5%	.....

The above figures are included in the table of "Miscellaneous Examinations" on page 70 and in the final table under "Other Diseases."

TYPHOID.

During the year the Conradi method of isolating typhoid bacilli from the blood of typhoid patients has been studied with a view toward introducing it as a routine diagnostic procedure if it seemed feasible from a practical standpoint.

The advantage of the Conradi method lies in the fact that the organism can be demonstrated in the blood of typhoid patients in the vast majority of cases during the *first week* of illness, while by the Widal method the reaction seldom appears before the seventh day.

The Conradi method consists in introducing into about five cubic centimeters of sterile ox-bile from $1\frac{1}{2}$ to $2\frac{1}{2}$ c.c. of the patient's blood, incubating for at least ten hours and then transferring a portion to sterile broth and incubating further. Any bacillus so isolated is then tested with positive typhoid blood for agglutination. After correspondence with Dr. Conradi, of Germany, a special outfit was devised by the writer, consisting of two sterile capillary tubes in a sterile test tube, and a test tube of the special bile media, the latter tube being closed with a sterile rubber stopper to prevent leakage and contamination of bile, the whole enclosed in a pasteboard box containing typewritten directions for taking the specimen. In hospital practice blood is best obtained from a vein — preferably the median cephalic — by means of an antitoxine syringe. For general practice, the above method not being feasible in all cases, it seemed best to

recommend that the blood be taken from the lobe of the ear or from the finger under strict aseptic precautions.

The Conradi method has been tried in a number of cases by physicians on request from the laboratory, particularly with those cases where blood has been submitted for the Widal reaction early in the disease. It has, however, not been altogether successful, due probably to the fact that a sufficient amount of blood has not usually been obtained.* The bile medium also does not appear to be uniformly good. It is to be hoped that further experiments can be conducted along this line, but for the present it does not seem practical to introduce the method as a routine procedure. In special cases, however, tests of this kind will be made if time permits.

Table No. I. — Typhoid.

MONTHLY TOTALS OF WIDAL REACTIONS.

MONTH.	Positive.	Negative.	Atypical.	Totals.
February, 1907	6	45	3	54
March	6	82	3	91
April	2	93	2	97
May	9	88	1	98
June	11	112	3	126
July	25	131	6	162
August	30	118	9	157
September	48	165	12	225
October	29	112	13	154
November	19	138	6	163
December	14	94	2	110
January, 1908	11	61	3	75
Totals	210	1,239	63	1,512
	14%	82%	4%	

Table No. II. — Typhoid.

SHOWING CASES CLASSIFIED.

Positive.	Negative.	Unsatisfactory.	Total.
192	1,043	20	1,255
15%	83%	2%	

* A spring blood lancet can be obtained on the market by means of which 1 to 2 c.c. can be obtained without difficulty.

MALARIA.

The greatest care should be exercised to obtain a *thin, even smear of blood upon the slide*, and the directions accompanying each outfit should be very carefully followed for this reason.

Malaria.

Positive.	Negative.	Unsatisfactory.	Total.
13	165	2	180
7%	92%	1%	

Although there has been a decrease of eleven in the total number of specimens examined, the number of positives have increased 6, or 3 per cent.

GONORRHOEAL OPHTHALMIA.

The Legislature of 1905 made it obligatory on the part of the attending physician or nurse to report to the Board of Health any case of eye inflammation occurring within two weeks after birth. The laboratory is prepared to examine smears from any case of suspected gonorrhoeal ophthalmia. Outfits for taking the smears may be obtained from any culture station.

Ophthalmia.

Positive.	Negative.	Unsatisfactory.	Total.
16	53	2	71
22%	75%	3%	

RABIES.

Collection of Specimens. — Dogs or other animals having symptoms of rabies should not be killed, but should be confined securely and notification sent to the veterinarian of the Board of Health. If the suspected animal dies his whole carcass should be preserved and notification sent as above. Failing this, the head at least should be preserved for examination.

Examination. — Impression smears are first made from portions of the Ammon's horn. If these prove positive further tests are unnecessary, and a report can be forwarded at once, often in from fifteen minutes to one-half hour after

the brain is removed. If the impression smears show no Negri bodies, portions of the Ammon's horn and cerebellum are hardened, imbedded in paraffin and sectioned. An examination of sections from the Gasserian ganglia for pathological changes is of value, but not absolutely diagnostic of rabies. If these sections prove negative guinea pigs are inoculated under the dura with an emulsion of portions of the brain and cord.

In the latter case, if positive, it is usually from ten days to two weeks before symptoms are noted, and they may be delayed for a much longer period of time.

Table No. I. — Rabies.

SHOWING CASES CLASSIFIED.

Positive.	Negative.	Total.
41	13	54
76%	24%	

In order to obtain as much information as possible upon the subject of rabies two guinea pigs are inoculated subdurally in every case with an emulsion of horn, cerebellum and cord. Positive reports are, however, given whenever Negri bodies are found in the smears or sections from the horn or cerebellum. As an instance of the great variation in the time required for the pigs to show typical symptoms, one case may be cited in which two pigs inoculated at the same time with the same material in equal amounts, the same needle, even, being used, showed symptoms respectively in 22 days and 241 days. In this case it would seem as if the difference in time must be due to a difference in the vital resisting powers of the pigs.

The shortest period of incubation was nine days, the longest 241 days, and the average (omitting the 241 day case) 17.3 days. This average agrees with the average of 17.2 days obtained in 1906.

Table No. I. — Glanders.

SPECIMENS EXAMINED FOR YEAR ENDING JANUARY 31, 1908.

MONTH.	Positive.	Negative.	Unsatisfactory.	Total.
February, 1907.....	4	10	1	15
March.....	6	11	0	17
April.....	4	11	0	15
May.....	13	19	2	34
June.....	4	4	0	8
July.....	6	10	3	19
August.....	3	6	1	10
September.....	5	4	4	13
October.....	4	11	2	17
November.....	7	6	1	14
December.....	4	11	1	16
January, 1908.....	15	14	1	20
Totals.....	75 36%	117 56%	16 8%	208

Table No. II. — Glanders.

SHOWING CASES CLASSIFIED ON GUINEA PIG TESTS.

	Positive.	Negative.	Unsatisfactory.	Total.
February 1, 1907, to February 1, 1908.....	67 44%	73 48%	12 8%	152

OTHER EXAMINATIONS.

Any disease of a bacteriological nature will be examined for free of charge. Before collecting specimens from diseases other than those already enumerated communication should be had with the laboratory.

Miscellaneous Examinations.

Positive.	Negative.	Unsatisfactory.	Total.
119 31%	250 64%	21 5%	390

In the above table are included the results of virulence tests of diphtheria bacilli and of the examination of urine for tubercle bacilli. The results of these two examinations are also given in table form on pages 63 and 66.

Special examinations during the past year have included examinations for the organisms causing influenza, pneumonia, gonorrhœa, paratyphoid, actinomycosis, xerosis of conjunctiva, syphilis (*s. pallida*), leprosy and anthrax.

The above table also includes tests, of pus, spinal and pleuritic fluid and faeces for the organism of tuberculosis, tests for ptomaine poisoning, of typhoid urine for the typhoid bacillus, of blood for filaria, and various other examinations.

Table Summarizing Routine Examinations for Year Ending January 31, 1908.

MONTH.	Diphtheria.	Tuberculosis.	Typhoid.	Glanders.	Malaria. ¹	Ophthalmia. ²	Rabies.	Other Diseases. ³	Total.	Milk Examinations.	Grand Total.
February, 1907.....	1,934	375	54	15	14	6	7	39	2,444	197	2,641
March.....	1,365	489	91	17	12	4	7	34	2,019	479	2,498
April.....	1,492	462	97	15	10	9	4	25	2,114	471	2,585
May.....	1,550	477	96	34	10	7	6	24	2,204	477	2,681
June.....	954	374	126	8	16	8	6	18	1,510	487	1,997
July.....	775	326	162	19	21	1	6	18	1,328	443	1,771
August.....	520	291	157	10	25	3	4	27	1,037	322	1,359
September.....	457	341	225	13	27	4	2	42	1,111	371	1,482
October.....	689	367	154	17	9	11	4	41	1,292	418	1,710
November.....	1,001	394	163	14	17	10	4	49	1,652	236	1,888
December.....	1,304	453	110	16	11	4	3	35	1,936	275	2,211
January, 1908.....	1,245	419	75	30	8	4	1	38	1,820	505	2,325
Total.....	13,286	4,768	1,510	208	180	71	54	390	20,467	4,681	25,148

¹ Thirteen positives.

² Sixteen positives.

³ Including gonorrhœa, pneumonia, influenza, genito-urinary tuberculosis, diphtheria virulence, etc.

Table Summarizing Routine Examinations for Ten Years Ending January 31, 1908.

YEAR.	Diphtheria.	Tuberculosis.	Typhoid.	Glanders.	Malaria.	Ophthalmia.	Rabies.	Other Examinations.	Milk Examinations.	Total.	Average per day.
1898-99 (9 mos)	3,948	.....	122	.....	.....	.....	3	.....	.....	4,073	15
1899-1900	7,930	.....	483	65	19	.....	2	27	.....	8,526	24
1900-1901	18,889	1,021	1,014	119	38	.....	0	44	.....	21,125	57
1901-1902	11,304	1,957	1,049	158	85	.....	0	52	.....	14,605	40
1902-1903	7,729	2,322	984	140	98	.....	0	32	.....	11,305	31
1903-1904	8,780	2,914	1,088	175	98	.....	1	45	.....	13,101	36
1904-1905	9,237	3,115	1,164	147	134	.....	3	88	3,468	17,356	47
1905-1906	7,331	3,650	1,281	174	182	40	1	103	5,559	18,321	50
1906-1907	12,061	4,255	1,630	258	191	69	47	334	5,005	23,850	65
1907-1908	13,286	4,768	1,510	208	180	71	54	390	4,681	25,148	69
	100,495	24,002	10,325	1,444	1,025	180	111	1,115	18,713	157,410	43

The above table shows several interesting facts. Diphtheria examinations show a slow but steady rise. Examinations of sputa for *B. tuberculosis* are increasing at the rate of about 500 examinations per year. The total increase in examinations over the previous year is 1,298, making the average number of examinations per day 69, the largest on record.

PART II.—BACTERIOLOGICAL EXAMINATION OF MILK.

1. Routine Bacteriological Milk Examinations.

During the year 4,681 examinations have been made of samples of milk for bacterial content, the presence of pus and pus producing organisms. A detailed account of the technique employed may be found in the annual report of 1905. The following is a brief summary of the work done:

Total number of samples examined	4,681
Number of samples showing over 500,000 bacteria per cubic centimeter	1,307 = 28%
Number of samples passed by microscopic method alone	1,404 = 30%
Number of samples showing presence of pus	16 = 0.34%

Number of samples showing streptococci . . .	35 = 0.75%
Number of samples showing both streptococci and pus	1

Table Showing Bacterial Content of Milk as Seized from Various Sources During the Year.

WHERE OBTAINED.	Number of Samples.	Count above 500,000 to a Cubic Centimeter.
Contractors.....	2,947	17%
Wagons.....	978	39%
Stores.....	643	59%
Unclassified.....	113	31%

The collection of bacteriological milk samples and enforcement of the bacteriological milk regulations are under the charge of Mr. James O. Jordan, Inspector of Milk, into whose hands have been placed daily (card catalogue) and monthly reports showing the results of the above work in detail.

2. *Special Milk Tests.*

In addition to the above the Boston Floating Hospital was supplied during the summer months with the necessary sterile apparatus for making bacterial counts on milk, whey, etc. Counts were also made from time to time to verify the results obtained by them on their tests.

3. *Investigative Milk Work.*

The following experiments relating to the technique of the milk examinations have been carried on as time permitted. The results obtained were submitted to the committee on Standard Methods of Bacterial Milk Analysis of the Laboratory Section of the American Public Health Association, this laboratory co-operating with other laboratories to further the work of that committee.

A. *Comparison of Whey Agar and Ordinary Agar.*

(By W. M. CAMPBELL.)

Comparative tests were made on 98 samples of milk, the milk being plated on both ordinary agar* and on an agar in which whey was substituted for the water ordinarily used in infusing the meat. The results obtained were as follows:

	WHEY AGAR.	AGAR.
Total number of colonies	6,689	8,382
Average number of colonies per plate	68½	85½

* Made in accordance with the recommendations of the committee on Standard Methods of Bacterial Milk Analysis of the American Public Health Association.

In addition to the lesser growth obtained on the whey agar, it has the additional disadvantages of being more expensive and more difficult to prepare, a precipitate appearing in the furnished product which renders the counting of minute colonies bothersome and somewhat difficult.

*B. Tests Showing Bacterial Increase or Decrease in Samples while in Milk Collecting Case. (Temperature of Case about 34 degrees Fahrenheit.)**

(By DR. F. H. SLACK.)

ACTUAL COUNT OF COLONIES 1-10,000 DILUTION.

Original Count.	After 4 Hours in case.	Original Count.	After 7 Hours in Case.
5	2	136	122
0	3	183	152
8	6	146	163
8	8	830†	390†
4	4	122	114
11	8	200	183
274	221	66	74
112	101	97	79
263	200	22	21
18	5	88	103
220	315		
196	143		
650	420		
70	60		
411	305		
275	235		
156	171		
115	159		

Original Count.	After 6 Hours in Case.	Original Count.	After 4 Hours in Case.	After 24 Hours in Case.
52	43	589	586	578
1,178	1,016	816	834	633
1,363	1,084	607	670	703
1,216	1,075	258	230	291
192	196	895	930	960
93	81	78	66	76
37	24	177	151	123
322	258	83	69	77
298	309	92	133	103
36	39	124	82	95
—	—	2	1	1

* American Journal of Public Hygiene, Vol. XVII., p. 356.

† There was evidently some technical error in the plating of this sample.

Since the variations are hardly more than might be expected in duplicate plates made at the same time, we conclude there is not only no increase in the number of bacteria between time of collection and plating, but usually a slight decrease.

*C. Tests to Show Whether or not Bacteria Increase while Dilutions are being made and Ultimate Fate of Milk Bacteria in Water.**

(By DR. F. H. SLACK.)

Original Count.	After 15 Min. in Dilution at Room Temperature.	Original Count.	After 4 Hours in Dilution at Room Temperature.	After 24 Hours in Dilution at Room Temperature.
54	40	150	28	Est. 1,000
2	1	415	147	Innumerable.
3	0	1,085	133	Innumerable.
5	15	655	92	Innumerable.
315	347	Est. 2,400	680	Innumerable.
143	117	257	115	Est. 1,100
60	56	Est. 1,500	202	17
137	135	Est. 1,200	311	Innumerable.
73	71	Est. 1,200	369	Innumerable.
100	87			
25	10			
101	102			
132	143			
59	59			
66	61			
3	3			
158	147			

Original Count.	After 6 Hours in Dilution at Room Temperature.	After 28 Hours in Dilution at Room Temperature.
10	8	Innumerable.
11	8	Innumerable.
6	3	Innumerable.
20	1	18
562	102	160
6	0	63
9	7	Innumerable.
0	0	1
80	2	10
93	12	Est. 600
102	10	112
0	1	0
1	3	0

* American Journal Public Hygiene, Vol. XVII., p. 357.

From these experiments we are led to conclude that during the few minutes the milk is in the dilution water there is no increase in the number of bacteria. On the contrary, for the first few hours there is usually a marked decrease which sometimes persists, but usually forms are present which eventually multiply exceedingly.

*D. Tests Comparing the Plating of 1-20 C.C. of Whole Milk with the Ordinary Dilution Methods.**

(By W. M. CAMPBELL.)

1-20 C. C. WHOLE MILK.		DILUTION 1-20.		DILUTION 1-100.	
Number of Colonies.	Count.	Number of Colonies.	Count.	Number of Colonies.	Count.
712	14,240	1,109	22,180	401	40,100
688	13,760	1,042	20,840	365	36,500
181	3,620	257	5,140	98	9,800
173	3,460	229	4,580	87	8,700
660	13,200	870	17,400	220	22,000
720	14,400	680	13,600	200	20,000
185	3,700	415	8,300	141	14,100
616	12,320	1,030	20,600	331	33,100
202	4,040	210	4,200	49	4,900
200	4,000	237	4,740	128	12,800
232	4,640	129	2,580	71	7,100
340	6,800	.....	.....	224	22,400
449	8,980	.....	.....	217	21,700
128	2,560	200	4,000		
110	2,200	240	4,800		
118	2,360	128	2,560		
96	1,920	140	2,800		

* American Journal Public Hygiene, Vol. XVII., p. 359.

PART III. — SPECIAL INVESTIGATIONS.

The following investigations, inspections and analyses have been made at the request of the Board:

Effect of Light and Moisture on the Longevity of B. Tuberculosis in Sputum.

Experiments along this line were begun in June, 1907. As nearly practical conditions as possible were obtained in order that the results might have a direct bearing on the

problem of tuberculosis in tenement-house rooms. The first set of experiments were in the nature of preliminary tests, and further experiments have been started based on what was learned during the first series.

As six weeks must elapse between the inoculation of the exposed sputum into guinea pigs and the autopsy, progress is necessarily slow. Tests will be continued as time permits during the coming year.

Tests of Embalming Fluids.

Acting under orders from the Board, five samples of embalming fluids were tested to determine their value from a bacteriological standpoint.

Time of Exposure — 1 hour.

Solution.	<i>B. Diphtheria.</i>	<i>Sta. Pyog. aureua.</i>	<i>B. Anthracis.</i>	Remarks.
A	All killed....	All killed....	None killed..	
B	All killed....	All killed....	None killed..	
C	All killed....	4 out of 5 survive *.....	None killed..	
D	All killed....	All killed....	None killed..	Diluted as directed. Undiluted kills anthrax.
E	All killed....	2 out of 5 survive *.....	None killed..	Diluted as directed. Undiluted kills anthrax.
<hr/>				
	25 tests.	25 tests.	25 tests.	

Further experiments were tried with *B. anthracis*, exposing the rods to the solutions for forty-eight hours with the following results:

B. Anthracis.

- A. All killed.
- B. All killed.
- C. One out of five alive. *
- D. All killed. (Diluted as directed.)
- E. One out of five survive. * (Diluted as directed.)

No systematic chemical analyses of the compounds were attempted, but special tests showed that all five contained formaldehyde and that C contained arsenic.

INDUSTRIAL EXHIBIT.

At the request of the Board an exhibit was prepared and set up in Horticultural Hall for the Exhibit of Industrial Conditions of the Womens' Educational and Industrial Union.

* Growth inhibited for several days.

MISCELLANEOUS TESTS.

In addition to the above report special tests were made as follows :

Pathological examination of lung of cow.

Bacterial examination of four samples of water, of which three showed pollution.

Several analyses of wall paper and fabrics for arsenic — all negative.

Chemical examination of small stuffed chickens sold as Easter toys. Skin preserved by the use of white arsenic in large quantity.

Chemical examination of paper diapers for the Boston Floating Hospital. Nothing injurious or irritating found.

Bacterial tests on sample of crude disinfectant.

Microscopical examination of pork.

Bacterial examination of one sample of canned corn.

All of which is respectfully submitted.

BURT RANSOM RICKARDS,
Director.

REPORT OF MILK INSPECTOR.

BUREAU OF MILK INSPECTION,
30 HUNTINGTON AVENUE, BOSTON, MASS.

To the Board of Health :

GENTLEMEN, — I have the honor to submit the following report for the year ending January 31, 1908:

The total number of samples collected and examined was 18,151, as follows:

Number of samples of milk from wagons	6,166
Number of samples of milk from stores	5,311
Number of samples brought in by citizens	217
Number of samples of milk (bacteriological)	4,609
Total milk samples	16,303
Number of samples of vinegar	1,120
Number of samples of butter, cheese and oleomargarine,	728
Total samples	<u>18,151</u>

The last year has been prolific of agitation of the milk question, the principal points at issue being those of standard and price. The consideration given the price problem within the last six months resulted in materially lessening, temporarily at least, the consumption of milk. It has been estimated by competent authorities that the use decreased so that the daily amount consumed was 50,000 quarts (about 20 per cent.) below the normal quantity. It is a fact that the business of some dealers diminished, in the poorer sections of the city, over 30 per cent. This resulted from the cessation or curtailing of purchases of milk by consumers. This limited demand for milk was felt alike by wholesale and retail dealers.

There has been a gradual recovery of this lost trade, but the amount now consumed is much below normal. While it is not the province of this report to discuss the price of milk, there were some features connected with the traffic which may be properly noted. At no time in recent years has the labor problem been of such prominence in connection with milk production as during the last year. By reason of the

independence of laborers and the high wages demanded, a condition of such magnitude resulted that many dairymen relinquished the whole or a part of their business. Undoubtedly the high price of food materials for cattle was also an important factor in determining this action. In the majority of instances, farmers sold such a portion of their stock that the remaining animals could be cared for without outside assistance. In a few cases, however, farmers abandoned the production of milk entirely, despite the fact that they were under contract to supply milk to wholesalers for definite periods.

There can be little doubt that these adverse conditions, combined with the trend of local agitation, have neither assisted in obtaining a cleaner supply or benefited the quality chemically. The effect was to divert the attention of consumers and of those engaged in supplying milk to issues other than those of cleanliness and quality, consequently efforts for improvement met, at least, a temporary check. To benefit consumers discussions relating to the milk subject should be directed to the possible dangers from dirty milk and the desirability of obtaining and caring for the clean variety, which should be the product of healthy animals.

MILK STANDARD.

As a whole the milk which came to the city during the past year was of fair quality, judged from the chemical basis. The question of a proper standard has received such bountiful consideration from outside sources that it was deemed advisable to ascertain the quality of the milk sold in this city by those milkmen who are supplying their customers with the product of their own cows. Some of these herds are kept within the city borders, while others are in nearby towns. In order that the milk might be representative of a dairy herd, the samples included in this list are from dairies of three or more cows. Most of the samples were taken from the teams as the milk was being delivered, but with an occasional dealer, where this was impossible, specimens were procured at the dairy. In a few instances where two samples were taken from a dealer the results were averaged. The figures, which are self-explanatory, may be found in the following table:

**Results from Examination of Milk Produced by Milkmen
Licensed in Boston who Peddle the Product of their own
Dairies.**

Samples taken from Wagons.

Number of Cows.	Per cent. Total Solids.	Per cent. Solids not Fat.	Per cent. of fat.	Number of Cows.	Per cent. Total Solids.	Per cent. Solids. not Fat.	Per cent. of Fat.
11.....	13.03	9.33	3.70	26.....	12.65	9.05	3.60
5.....	13.59	9.79	3.80	12.....	13.60	9.20	4.40
25.....	12.78	8.98	3.80	30.....	13.28	9.28	4.00
30.....	12.91	8.76	4.15	180.....	13.18	8.98	4.20
20.....	12.20	8.90	3.30	17.....	13.24	9.24	4.00
17.....	13.40	9.00	4.40	30.....	15.07	9.57	5.50
4.....	13.21	9.11	4.10	6.....	12.48	8.88	3.60
3.....	12.68	9.03	3.65	3.....	13.17	9.22	3.95
30.....	12.49	8.87	3.62	18.....	13.18	9.18	4.00
4.....	13.73	9.53	4.20	7.....	13.10	9.15	3.95
8.....	14.37	9.42	4.95	3.....	13.02	8.92	4.10
7.....	13.48	8.78	4.70	14.....	12.93	9.33	3.60
4.....	14.73	10.15	4.58	8.....	12.64	9.24	3.40
30.....	13.45	9.45	4.00	7.....	13.61	9.03	4.58
125.....	12.85	9.05	3.80	3.....	13.16	8.86	4.30
34.....	13.58	9.38	4.20	82.....	13.57	8.97	4.60
90.....	13.10	9.20	3.90	6.....	13.02	9.32	3.70
45.....	13.45	8.85	4.60	8.....	13.16	9.36	3.80
47.....	13.43	9.18	4.25	31.....	13.74	9.54	4.20
20.....	13.74	9.14	4.60	250.....	12.66	8.66	4.00
16.....	12.71	9.11	3.60	9.....	13.90	9.30	4.60
200.....	13.61	9.41	4.20	5.....	12.33	8.33	4.00
9.....	14.10	10.25	3.85	3.....	13.61	8.96	4.65
34.....	12.75	9.15	3.60	3.....	12.98	9.08	3.90
5.....	13.51	8.91	4.60	3.....	14.07	9.67	4.40
17.....	13.14	9.29	3.85	6.....	13.28	9.38	3.90
3.....	13.32	9.27	4.05	110.....	12.52	8.92	3.60
25.....	13.24	9.34	3.90	10.....	13.36	9.06	4.30
7.....	14.05	9.40	4.65	13.....	13.21	9.01	4.20
18.....	13.32	9.62	3.70	10.....	12.72	9.09	3.63
Average for the sixty dairies.....					13.27	9.19	4.08

NUMBER OF MILK DEALERS AND QUANTITY OF MILK HANDLED DAILY.

During the year there has been a further decrease in the number of milkmen, 28 dealers having abandoned the business. In 1906, 28 wagon dealers also discontinued the sale of milk; thus at the present time the Bureau has 56 less licenses than in 1905. The licensed dealers now number 288. There was a slight decrease in the number of shops engaged in the sale of milk, 3,730 now being registered to deal in this commodity. In 1906 there were 3,746 registered establishments.

About 360,426 quarts of milk were handled daily by Boston dealers in 1907. Of this quantity, 324,386 quarts, or 90 per cent., were brought to the city by means of railroads; 31,076 quarts, or 8.62 per cent., were conveyed by dealers in adjoining towns and cities by means of teams; 4,964 quarts, or 1.38 per cent., were produced by the 579 cows located within the city limits. Forty more cows were kept in Boston during 1907 than in 1906. By comparison with 1906, the amount of railroad milk increased nearly 2 per cent., and the quantity of milk produced in the city was slightly larger, but there was a decrease of nearly 2 per cent. in the volume of milk transported by wagons.

CERTIFIED AND REASONABLY CLEAN MILK.

Boston now has three sources of certified milk, and the available daily supply amounts to 855 quarts. A new dairy has recently placed its product upon this market. All of these dairies are under the supervision of milk commissions, and the health of the cattle and of employees is of the best, and the utmost cleanliness of cattle, employees, utensils, and surroundings prevails. Temperature regulations are insisted upon, and clean, wholesome milk, with not more than 10,000 bacteria to the c.c., results. The milk is also delivered with comparative freshness.

The production of clean, cold milk involves much labor and expense, consequently dairies raising certified milk must receive and are entitled to more money for their product than is demanded for milk not produced under these exacting and commendable conditions. Certified milk deserves support; its success means much to the public health and to the movement for suppression of dirty milk supplies.

The milk commission of another medical society has given approval to certain dairies producing milk under reason-

ably clean conditions. The requirements governing the dairies from which this milk is obtained necessitate the employment of cleanliness, care, refrigeration and delivery to consumer before the milk is old. Milk of this kind is often designated as inspected milk, and it should not have more than 100,000 bacteria to the c.c. Its production involves more labor than that required for the usual type of milk, consequently those handling it are entitled to a corresponding increase in price. At present 8,950 quarts of this reasonably clean milk are being supplied to consumers in this city.

MILK CANS.

The replacing of the old style 8½-quart milk can with cans of larger size, for transporting milk by rail to this city, still continues. One concern is now bringing all of its milk into the city in 21¼-quart cans, while another company is using this unit for nearly all of its milk supply. Another firm substituted 40-quart cans for about one-half of the 8½-quart cans formerly used. One firm replaced the 8½-quart cans upon one of its cars with 21¼-quart cans. All of the contractors who use these larger units feel that such change is conducive to a better milk supply. Only one large firm is employing the small can exclusively for transporting milk from the country, but two of the small contracting concerns are still using the small cans. One of these latter contends that producers, many of whom are old men, do not take kindly to the large cans for the reason that they are heavy and difficult to handle when filled with milk.

Nearly all of the cans are now washed by contractors before they are returned to the farmer. One concern sends one-fourth of its daily 8,000 can supply to the country unwashed, but the other firms are returning all cans washed. Four of these companies state emphatically that in their opinion the washing of cans has improved their milk supply, and one firm states that present bacteriologic results could not have been obtained without washing and sterilizing cans before returning to producers. One firm is of the opinion that the supply has been bettered, but that advantage is taken of the system by producers who disclaim responsibility of rewashing cans which by unavoidable means become soiled in transit. This is a state of affairs which should not exist. No producer of milk should use a can for milk which is not in condition to be employed as a container for this fluid. The responsibility for such action is then

upon the farmer and not upon those who do the washing. Whatever the circumstances, milk cans unfit for use as holders of milk should not be filled with milk until made clean. Fairness to seller, buyer, and especially to the consumer, demand that such care be constantly exercised. One company asserts that more trouble is experienced from the condition of the milk where producers receive washed cans than where the latter are sent unwashed, and that divided responsibility does not yield the best results.

Wherever the cans are washed they should be made clean, and if the washing is done by the contractor they should be sent to the producer in the best possible condition. They should not be returned to the farmer, as was done in one instance last summer, with dirty rinsing water, a specimen of which was found to contain 780,000 bacteria to the cubic centimeter; in thirty-six hours after the first examination the number of bacteria had increased to 66,000,000 to the cubic centimeter. As there were from 30 to 80 cubic centimeters of water in the various cans, it is readily seen that this offered abundant bacterial seeding for any milk placed in these cans. The water in these cans appeared soapy, but the odor was that of sour milk.

MISUSE OF MILK CONTAINERS.

RUSTY CANS.

A marked improvement has been noted in the treatment of milk cans by store and restaurant keepers, and instances are now rare — by comparison with other years — where cans are used as containers of substances like kerosene oil, molasses, broken eggs, etc. Some shopkeepers are even washing the cans before returning them to milkmen. To a great extent the misuse of cans is confined to foreigners who are ignorant of the law and regulation governing this subject. A majority of the complaints brought to the attention of the Bureau were those where cans had been employed for cooking purposes, in the heating or preparation of soups, chocolate and other substances. In every instance a warning notice served to cause abandonment of this illegal practice.

Householders and those who buy milk in bottles in stores and offices are, however, in some instances failing to co-operate with the movement for preventing the misuse of milk vessels. This is manifested in their desire to purchase from shopkeepers and restaurateurs a variety of substances, and offering as containers therefor bottles used in the milk traffic. Temptation is thus placed in the way of the dealers, even

where there is a desire on the part of the latter to comply with the requirements. In many instances requests to fill these containers are refused, and oftentimes this results in loss of trade. The dealer who honors the demands of customers and misuses milk vessels violates the law and regulation. Consumers should give this clean milk vessel movement firm and consistent support, and they are unfair to dealers and to themselves when they attempt to buy in milk bottles substances other than milk. Consumers are the ones most benefited from the proper use of milk containers, and they should insist that dealers comply with the regulation rather than to give cause for its violation. In any event the burden of educating the public should not be placed upon shopkeepers. It would be well also for consumers to bear in mind that to cause or permit misuse of a milk vessel is a violation of the law which involves the purchaser as well as the shopkeeper.

The distribution of cards to shopkeepers selling milk, relative to the subject of improper use of milk vessels, has assisted materially in directing attention to the necessity for confining the employment of milk containers within proper limitations.

A number of complaints were lodged with the Bureau during the year concerning rusty cans which were being sent to the country by contractors. The can question in its connection with the milk traffic is one of great importance, involving as it does a large investment of capital, but despite this fact, and the accompanying temptation of dealers to make a can last as long as possible, rusty cans have no place in the handling of good milk. The rough surfaces offered by the rust make thorough cleaning impossible, and the use of rusty cans under any circumstances cannot fail to be harmful to milk. It may be difficult to know just where to draw the line in deciding at what point a can should be no longer used, but a safe rule to follow is to discard all cans about which there is any doubt. It is not the use, but the abuse, which too often unfits milk cans for use as containers of milk. Very little or no system is used by milkmen in looking after their cans, and as a result cans are allowed to remain with customers much longer than they should, and usually under conditions unfavorable to the life of the can and to sanitary milk. A part of this lack of oversight is due to competition and fear of displeasing and losing customers. Prompt and systematic collection of cans, and their use solely for the purpose for which they were intended, would mean better milk and extend materially the time over which

the cans could be used. But the abuse of milk cans is not confined wholly to the city. They are kept in the country by farmers, instead of being returned to the contractor, and there often used as containers for water or other liquids. The gradual displacement of the 8½-quart can for transporting milk from the country has lessened the misuse of cans by the producer materially. The cans of larger size are a prohibition against improper use by reason of their great weight and unwieldiness when filled.

INVESTIGATION OF COMPLAINTS.

During the year the Bureau was called upon to investigate a variety of complaints, some being lodged by citizens. They indicated that despite the advances made in the handling of milk abuses still exist, and that slovenly methods and carelessness are difficult of extermination.

These complaints included the transportation of milk by train in cans minus stoppers, but covered with burlap or with newspaper. In some instances the newspaper was broken and allowed the train dirt to come in contact with the milk. At another place of business the milk drainings and wash water from the cans and bottles were allowed to collect upon the ground underneath the building where the milk was handled; under the influence of summer temperature the odor from this stagnant pool became extremely noxious. One milkman was found washing milk bottles in tubs in which the family washing was done. At one dairy the milk pails were being washed with dirty water and by means of dirty clothes. The wash water was either from a filthy pond or from a well underneath the barn. Water from the cow stalls was dripping down on the cellar floor within a few feet of this well. There was dirt on the surface of the water, and in the well cans of milk were suspended. The temperature of the water was 60 degrees Fahrenheit, while that of the milk after being in the water several hours was 64 degrees Fahrenheit. Other cans of milk were in a box which took the place of an ice chest. The cans were submerged in water to about half their height, and resting on two of the cans was a small piece of ice. This milk was awaiting bottling, and had been ten to twelve hours cooling to 63 degrees Fahrenheit. No bottles were at hand, but the proprietor was away endeavoring to secure a supply. Milk was also found in the barn in mid-summer in uncovered vessels, and in each portion of milk there were numerous flies. Hogsheads of sour brewery grains were kept in the barn, and the place was in need of

whitewashing. The employees were indifferent to the care necessary to the proper handling of milk.

This is a type of an objectionable dairy. Little wonder that this man's customers found dirt in the milk and complained of its taste and keeping qualities. One milkman was discovered filling milk bottles upon the street, and some days, it was alleged, he used his hands for a funnel while engaged in this work. Other illustrations might be cited, but the above will suffice to demonstrate the need of increasing diligence in dealing with both problem and individuals. In no other manner can lasting and progressive improvements be obtained.

DAIRY INSPECTION.

Action has been taken in every instance upon the information furnished your Board by the Massachusetts State Board of Health concerning unsanitary dairies. These facts were forwarded by your Board to this Bureau for adjustment. The milk from these dairies was being sold in this city, and the surroundings or conditions were such as to prohibit the production of clean, palatable milk.

The unsanitary features covered a wide range and included dirty cows; necessity of general cleaning of barn and premises or cleaning of tie-up; keeping of pigs under or near the barn—these animals were usually fed on swill, and in many instances generous portions of this food in a putrid condition was scattered about the premises; keeping of horses with cows; lack of milk room; drainage of cow yard or premises in vicinity of barn; insufficient light; overcrowding of cows; and for the presence in the barn of fermenting or sour brewery grains.

Many of these farms, and especially those where swill was being fed to pigs, were in the vicinity of Boston, and the milk was transported to this city by teams and sold by milkmen. The other dairies were a greater distance from this city, some being out of the State, and the milk was purchased by contractors and transported to Boston by railroad.

In each case the dealers who were selling the product of these objectionable dairies were notified that conditions at the farms would have to be corrected, otherwise the milk could not come to this city; *i.e.*, the responsibility for the condition of these dairies was placed upon those selling the product. Reports were later received from these milkmen. A majority indicated compliance with the requirements upon the part of the dairymen, but some of the latter

preferred to cease producing milk rather than make the necessary changes. In a few instances, milkmen stopped purchasing the product of dairies where the proprietors resorted to dilatory tactics or refused to better conditions. At eight of these places the proprietors either sold all of their pigs or moved them from the immediate vicinity of their barns. One gratifying result of this campaign was the erection of several new cow stables.

A summary of the work follows:

Number of unsanitary dairies	99
Number of dairies reported as complying with conditions,	76
Number of dairies where no improvements were made and milkmen stopped purchasing the milk	11
Number of dairies where the cows were sold and the busi- ness of milk production abandoned	7
Number of dairies where the presence of tuberculous cows was suspected, and where the milk was excluded until the cows were either disposed of or their freedom from tuberculosis was demonstrated by the tuberculin test . .	5
	<hr/> 99

UNDESIRABLE DAIRIES.

About the worst type of place used for milk production to be found in the vicinity of a large city is that of an abandoned estate which has been allowed to go to ruin because of lack of interest of former or present owners, or by reason of the enormous expense involved in keeping the buildings — of which there are usually many — in repair. With such a plant as the above leased to an alleged dairyman, whose only object is to get as much financial return from his occupancy as possible, a combination is furnished difficult to excel from the standpoint of unfitness for the raising of milk. The temperament of the individual who leases an estate of this kind is usually such as to render the production of milk under proper conditions impossible; and where the producer possesses willingness, either his financial state or the terms of his lease ordinarily operate against sufficient repairs to fit the place even for producing a fair grade of milk. The list of indictments which might be lodged against these places on the score of unsuitability is seemingly never-ending. Ordinarily they possess only one praiseworthy feature, and that is proximity to customers, rendering the delivery of milk of comparative freshness possible. But to offset this there is the employment of tumble-down buildings with rotting and defective tie-ups for the cattle, an



FIG. 1.—MILK ROOM WITH TUB AND BRUSH USED FOR WASHING MILK BOTTLES, MILK PAIL AND STRAINER UNWASHED, AND CANS CONTAINING SOUR MILK DRAININGS.





FIG. 11.—ROOM IN STABLE IN WHICH FOUR EMACIATED COWS WERE HOUSED.





FIG. III.—MAIN PORTION OF STABLE, USED FOR HORSES AND A FEW COWS. COW PARTIALLY COVERED BY BLANKETS HAD A BROKEN LEG.





FIG. IV. — FILTHY COW YARD WITH STAGNANT POOLS OF WATER. COW SHED APPEARS ON RIGHT OF PICTURE.



FIG. V. — COW SHED, DEFECTIVE FLOORING AND DRAIN, AND GENERAL RUN-TO- RUIN POLICY.





FIG. VI.—END OF COW SHED AND UNPROTECTED MANURE PILE. MUCH OF THE VALUABLE PORTION OF THE MANURE WASTED THROUGH ACTION OF RAIN.





FIG. VII.—OWNER OF THE DAIRY AND EMACIATED COW.

abundance of dirt and cobwebs, usually in winter filthy cows, inadequate water supplies and oftentimes no arrangement for heating water for cleansing utensils, lack of ice, absence of or poorly adapted milk room, and bottling of milk by not over-clean children. Not infrequently other animals are kept near or are allowed to run about the tie-ups.

At one of these places where there was a scant water supply, a sample of the water which had been used in cleaning milk bottles was found to contain about 4,000,000 bacteria to the cubic centimeter, and there was no indication of facilities for the subsequent employment of rinsing water in removing traces of the above heavily laden bacteriologic fluid from the bottles. At the same establishment a straining cloth was being used which from lack of cleanliness and abundance of odor would play havoc with the best milk supply extant.

The regulation of these places offers a problem of much difficulty, for even though the proprietors are compelled to put their buildings in passable condition, constant attention is necessary to assure the production of milk in accordance with modern requirements. The regulation of individuals, which has so much to do with sanitary milk supplies, is a more serious problem than that of surroundings. To illustrate conditions at one of these leased farms, the following photographs, which were taken subsequent to the lessees being notified to improve the condition of this establishment, are reproduced:

Figure I. — Figure I. is that of the milk room located in one corner of stable. On the day of the first inspection, the tub which serves for holding the water used in washing milk utensils was half-full of dirty water; there were no conveniences for rinsing the bottles or cans after washing or for heating the water used in cleansing. There was no ice about the premises, nor was any pretence made to cool the milk other than to place the cans in an open well, which was in the cow yard. The cans shown contained sour milk drainings, and the pail and strainer were left unwashed to await another milking.

Figure II. — This represents the room opposite the milk room. In this room, which is 11 feet by 14 feet by 10 feet high, and ventilated by a window, 20 by 24 inches, from which a part of the glass had been broken, four emaciated cows were kept. These cows were not giving milk, and they were classified as "springers" by the proprietor, who asserted that their physical condition was due to a desire on his part to prevent the animals having "milk fever." The room had been recently whitewashed.

Figure III. — Figure III. shows the main portion of the stable where the horses and a few of the cows were kept. It also

serves as an infirmary, for the cow whose head appears underneath the blanket had a broken leg. Some old harnesses and the dilapidated pail used in whitewashing operations are shown in this picture. The place was ventilated only by doors at either end of the stable. Opposite the stalls, on the day before these photographs were procured, a dead dog was found.

Figure IV. — Figure IV. is that of the cow yard, and its mucky, dirty, untidy and moist condition is well depicted. It was impossible for man or beast to cross this yard and keep clean. At one end of the enclosure was the well previously mentioned under Figure I. The main body of the cows were housed in the shed which appears at the right of the picture. Attempts at natural ventilation are disclosed.

Figure V. — Despite the recently whitewashed walls, the dilapidated character of the cow shed is manifest. The place was lighted by a few small windows and by means of the space, partially closed by burlap, at the end of the shed. Through this space the cow manure was thrown. There were many cracks and holes in the walls beside those which appear in the picture. The drain for conveying the urine away was defective, and the ground in many places was well soaked with this excreta. The odor was repugnant to a good milk supply. Some of the cows were extremely filthy.

Figure VI. — In Figure VI. the end of the cow shed and the space closed with burlap for removal of the manure are shown. This manure pile was a veritable sea of filth, unprotected from the elements, and the soluble portion was allowed to escape down the near-by hillside. Thus much of the valuable property of the manure was wasted.

Figure VII. — The proprietor of the establishment and one of the emaciated cows (a "springer") appear in Figure VII. The raiment of the former shows the result of recent whitewashing operations. At the end of the stable one sees the window of the milk room.

BACTERIOLOGIC EXAMINATION OF MILK.

From the mere standpoint of figures, the results from the bacteriologic examination of milk samples from contractors is not as satisfactory as in former years. Despite this adverse showing, however, it cannot be gainsaid that progress has been made during the last year towards a cleaner milk supply, and that greater efforts were put forth to suppress filthy supplies than in any previous year since the movement for clean milk began. An important influence upon the number of samples from this source failing to comply with the standard of 500,000 bacteria per c.c., is the fact that more samples than usual were collected during the warm months of the year when the bacterial content is highest. In this respect the work is not as indicative of the quality of the milk from

contractors as were the samples collected during 1905 and 1906. Another factor affecting percentage results is that fewer samples were collected from contractors who are endeavoring to better their product, and whose work in this direction is meeting with success. In 1907, 761 warnings were issued to dealers for milk of high bacterial content; 299 of these notices were sent to contractors, and by the latter were subsequently forwarded to producers in the country. The total samples collected from contractors were nearly 1,000 less than in 1906. While the percentage of samples containing under 100,000 bacteria to the c.c. was considerably less than that of the previous year, the percentage of samples complying with the standard (500,000 bacteria per c.c.) is only 6.28 per cent. under that of 1906. Table I. indicates the character of milk obtained from contractors.

Table I. — Bacteriologic Examination of Milk Samples from Contractors. Taken from Cars on Arrival.

BACTERIA PER CUBIC CENTIMETER.	Number.	Per cent.
Under 50,000	1,301	46.87
50,000 to 100,000	633	22.80
100,000 to 200,000	179	6.40
200,000 to 300,000	91	3.27
300,000 to 400,000	57	2.53
400,000 to 500,000	51	1.83
Total under 500,000	2,312	83.70
500,000 to 600,000	47	1.69
600,000 to 1,000,000	109	3.93
1,000,000 to 3,000,000	164	5.90
3,000,000 to 5,000,000	61	2.23
5,000,000 to 10,000,000	46	1.32
Above 10,000,000	37	1.23
Total above 500,000	464	16.30
Total	2,776	100.00

Of these specimens 83.7 per cent. were within the Board's standard, and 16.3 per cent. exceeded this limit.

These results show a large percentage of samples with high bacterial content, many with over a million bacteria per cubic centimeter. Much of this milk was undoubtedly from dairies where undesirable conditions prevailed. The figures demonstrate the necessity of eliminating the product of these

dirty dairies. Milk only from the highest class of farms should be given the public. Those who are dealing in milk should have such an oversight over the product supplied to consumers as to be cognizant of what dairies are furnishing milk of commendable quality. Clean dairies should be given the preference under all circumstances. No milkman, with consideration for the well-being of consumers, or who is guarding his own interests from a business standpoint, can afford to furnish milk of any other type. Dairymen who persist in the dirty milk policy after ample warning should be made to suffer the quick penalty of inability to market their product.

Table II. — Bacteriologic Examination of Milk Samples from Individual Contractors. These Specimens Considered collectively in the Preceding Table.

BACTERIA PER CUBIC CENTIMETER.	A		B		C		D		E		F		G	
	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
Under 50,000	63	68.38	239	48.88	190	51.33	106	55.28	248	49.60	222	38.28	233	42.05
50,000 to 100,000	13	15.00	122	24.98	91	24.40	32	16.97	149	29.80	109	18.80	117	21.12
100,000 to 200,000	6	6.33	20	4.08	22	5.98	13	6.80	24	4.80	40	6.90	54	9.74
200,000 to 300,000	4	4.13	14	2.86	7	1.91	5	2.62	19	3.80	24	4.14	18	3.24
300,000 to 400,000	2	2.06	10	2.04	6	1.72	5	2.62	6	1.20	16	2.75	12	2.16
400,000 to 500,000 .....	.....	.....	7	1.43	7	1.91	7	3.66	4	.80	15	2.58	11	1.96
500,000 to 600,000 .....	.....	.....	5	1.02	9	2.43	2	1.05	1	.20	12	2.07	18	3.24
600,000 to 1,000,000 .....	.....	.....	14	2.86	7	1.91	13	6.80	16	3.20	27	4.65	32	5.70
1,000,000 to 3,000,000	3	3.05	32	6.55	11	2.99	5	2.62	15	3.00	57	9.83	41	7.40
3,000,000 to 5,000,000	1	1.05	11	2.24	8	2.16	2	1.05	12	2.40	20	3.45	7	1.25
5,000,000 to 10,000,000 .....	.....	.....	10	2.04	5	1.35	.....	.....	4	.80	24	4.14	3	.54
Above 10,000,000 .....	.....	.....	5	1.02	7	1.91	1	.53	2	.40	14	2.41	8	1.60
Total under 500,000	88	95.90	412	84.27	323	87.25	168	87.95	450	90.00	426	73.45	445	80.27
Total above 500,000	4	4.10	77	15.73	47	12.75	23	12.05	50	10.00	154	26.55	109	19.73
Total	92	100.00	489	100.00	370	100.00	191	100.00	500	100.00	580	100.00	554	100.00

Table II. indicates the character of the samples from the individual contractors. The milk from only two concerns, namely, "A" and "D," denote an improvement over 1906. The milk from firm "A" indicates an increase in the percentage of samples with less than 50,000 bacteria per c.c., while that from "D" shows a slightly higher percentage of specimens with over 50,000 bacteria to each c.c. The percentage of samples containing more than the permissible number of bacteria per c.c. is of interest. For the individual firms, from 4.10 to 26.55 per cent. of samples above the standard is indicated. The concerns with three highest percentages of samples over 500,000 bacteria per c.c. are those making a specialty of "commercially pasteurized" milk. The bulk of the samples from these firms was procured before the product had been thus processed. In at least one instance this high percentage of samples with large bacterial content is directly attributable to the introduction of "pasteurizing" machinery. Since the advent of this renovating outfit there has been a material lessening in attempts to procure clean milk from producers, reliance evidently being placed upon a temporary heating to make a stale, dirty product salable. This fact is worthy of note as indicating that in this instance at least "commercial pasteurizing" is inimical to the movement for clean milk.

Chart I. shows the comparative bacteriologic standing of the various contracting firms for 1905, 1906 and 1907; also the percentage of infected specimens from the companies for the same years. While there has been a decrease, as previously stated, in the percentage of specimens above the bacteriologic standard with most of the concerns, improvement is to be noted in a few instances. The diminution in infected samples is pronounced, and it will be observed that there has been a constant decrease in the percentage of these abnormal milks. While to the degree just indicated the samples from contractors were not as good as in the preceding year, the wagon and store specimens indicate improvement over 1906. The causes directly assignable for this result are that more samples were procured from these sources during periods of low temperature and that the ice supply was more abundant than in 1906. It is possible also, and to be hoped, that the betterment is in a measure due to increased efforts to procure clean milk and to the methods of caring for it prior to delivery to consumers. As has been mentioned in previous reports, much of the increase in bacteria, from the time of arrival of the milk to its being found upon wagons and in shops, is due to



methods of handling and to its being stored nearly twenty-four hours awaiting delivery. A part of the blame for this ageing of milk has been correctly placed upon the consumer, for without this storing the cream would not all have arisen to the top of the milk, a condition unsatisfactory to consumers. At the same time it must be admitted that milkmen who are conducting their business upon modern methods are much better equipped for the storing of milk and keeping it at a low temperature than are many consumers. Furthermore, if the milk was delivered upon the day of arrival (based upon the time that milk reaches the city by railroad at the present time), a portion of the milk would have to be kept by the consumer for use upon the following day. In this connection a significant factor must be considered, namely, that some consumers do not use ice even in summer, and that some of those who buy ice are without ice chests in which to store or properly refrigerate their milk. Complaints as to sour milk have actually demonstrated these conditions during the last summer. Furthermore, it is doubtful if the milk, when placed in the ice chest of the consumer, is kept as cold as when it is in the refrigerators of the milkmen, where in most instances it is packed in ice.

Of the wagon samples examined during the year (Table III.) 59.73 per cent. were found to contain less than 500,000 bacteria to the c.c., and 40.27 per cent. exceeded this number, while 34.82 per cent. were under 100,000 bacteria per c.c. In 1906, 52.21 per cent. of wagon specimens were within the standard, but only 25.73 per cent. of these samples contained less than 100,000 bacteria to the c.c.

Table III.—Bacteriologic Examination of Milk Samples from Wagons.

BACTERIA PER CUBIC CENTIMETER.	Number.	Per cent.
Under 50,000.....	237	22.44
50,000 to 100,000.....	136	12.38
100,000 to 200,000.....	87	8.34
200,000 to 300,000.....	74	7.00
300,000 to 400,000.....	45	4.36
400,000 to 500,000.....	55	5.21
Total wagon samples under 500,000.....	634	59.73
500,000 to 600,000.....	48	4.65
600,000 to 1,000,000.....	113	10.81
1,000,000 to 3,000,000.....	137	13.07
3,000,000 to 5,000,000.....	55	5.21
5,000,000 to 10,000,000.....	36	3.41
Above 10,000,000.....	33	3.12
Total wagon samples above 500,000.....	422	40.27
Total.....	1,056	100.00

Although the examination of store milk (Table IV.) denotes an improvement over 1906, it is evident that this old, exposed and multi-handled milk, even at its best, is unsuited for certain purposes, such as food for infants. The results obtained with this type of milk for the years 1905, 1906 and 1907, demonstrates this fact conclusively. Of the examinations for these three years, the samples of 1907 were most favorable to shop milk. Despite this fact, however, only 10.86 per cent. of the specimens were found to have less than 100,000 bacteria per c.c. The comparative figure for 1907 shows only 4.26 per cent. of the milk from stores with less than 100,000 bacteria to the c.c.

Table IV. — Bacteriologic Examination of Milk Samples from Stores.

BACTERIA PER CUBIC CENTIMETER.	Number.	Per cent.
Under 50,000	35	6.66
50,000 to 100,000	22	4.20
100,000 to 200,000	40	7.62
200,000 to 300,000	31	5.90
300,000 to 400,000	27	5.15
400,000 to 500,000	34	6.47
Total store samples under 500,000	189	36.00
500,000 to 600,000	35	6.66
600,000 to 1,000,000	91	17.34
1,000,000 to 3,000,000	118	22.47
3,000,000 to 5,000,000	50	9.53
5,000,000 to 10,000,000	29	5.53
Above 10,000,000	13	2.47
Total store samples above 500,000	336	64.00
Total	525	100.00

Thirty-six per cent. of the store samples complied with the standard. These findings, in addition to the other results, are sufficient for the condemnation of store milk for infant feeding. Those who use, advise, or tolerate the employment of shop milk for this purpose are tempting fate unnecessarily. Its use as food for babies warrants the severest censure. Even with "commercially pasteurized" milk which is now sold to some extent in stores, the bacterial content remains alarmingly high. Of 73 samples of this heated milk collected in 1907, only 34.25 per cent. was found to be under the

bacteriologic standard of the Board of Health. The percentage of this grade of milk complying with the requirement is less than that of unheated store milk; it must also be borne in mind that the bacteria remaining in this "commercially pasteurized" milk, and not destroyed by the ordinary mode of heating, may subsequently produce changes which would cause the milk to be a greater source of danger than if it had not been subjected to this renovating treatment. Milk thus processed should be distinguished by label so that consumers may be aware of what they are purchasing.

Table V. — Bacteriologic Examination of Pasteurized Milk from Stores.

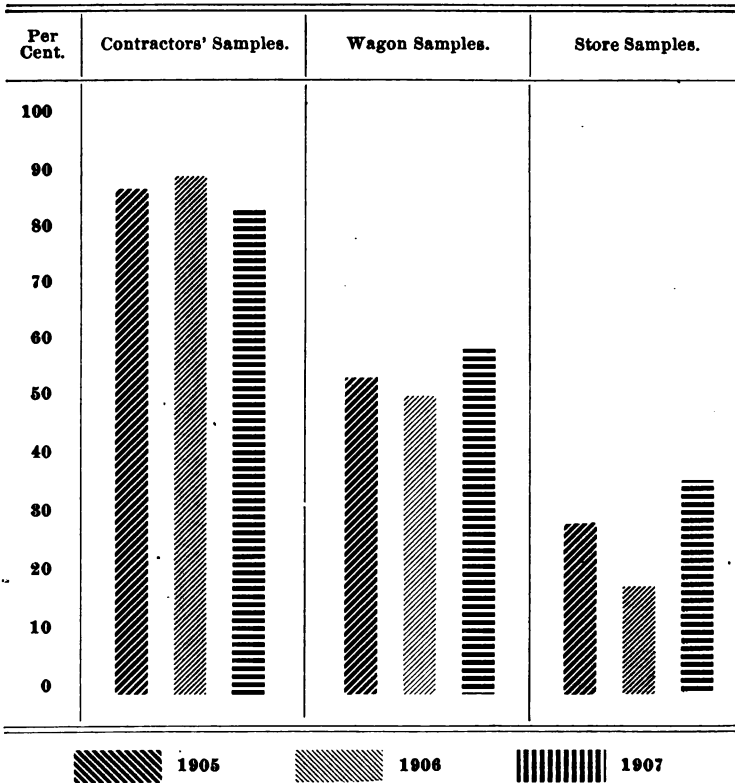
BACTERIA PER CUBIC CENTIMETER.	Number.	Per cent.
Under 50,000	3	4.12
50,000 to 100,000	7	9.59
100,000 to 200,000	1	1.36
200,000 to 300,000	3	4.11
300,000 to 400,000	5	6.85
400,000 to 500,000	6	8.22
Total samples under 500,000	25	34.25
500,000 to 600,000	5	6.85
600,000 to 1,000,000	13	17.82
1,000,000 to 3,000,000	25	34.24
3,000,000 to 5,000,000	3	4.12
5,000,000 to 10,000,000		
Above 10,000,000	2	2.72
Total samples above 500,000	48	65.75
Total	73	100.00

While custom demands that milk be sold in shops, and a large quantity is required daily for this purpose, it is only a question of time when the number of these places dealing in milk will be materially curtailed. Satisfactory progress towards better milk supplies cannot be made without eliminating as one factor of improvement the undesirable shops now dealing in this product. Solely on the ground of personality, many of the proprietors of these objectionable places indicate their unfitness to care for milk or appreciate the necessity for its proper supervision. Progress towards cleaner milk supplies could be made with greater speed by adjusting the question upon the score of temperament,

rather than by rule or regulation. But such application ought not to be confined to shopkeepers; it should include all who have to do with milk production or handling.

In addition to the bacteriological examinations previously enumerated, 179 samples of milk were tested which may be designated as unclassified specimens. These were from a variety of sources, and some of them had not been properly cared for previous to examination. Despite this fact, 65.56 per cent. had less than 500,000 bacteria to the c.c.

The diagram which follows indicates the comparative percentage of samples from contractors, wagons and stores for 1905, 1906 and 1907 which comply with the regulation of the Board of Health:



The contractors' column shows the condition of the milk as it arrives from the country; the wagon and store samples are for the most part of milk being supplied to consumers the day following its receipt in this city. An improvement

for wagon and store milk over previous years is noted, but the contractors' milk fell below the percentages of previous years.

MILK CONTAMINATED WITH PUS AND STREPTOCOCCI.

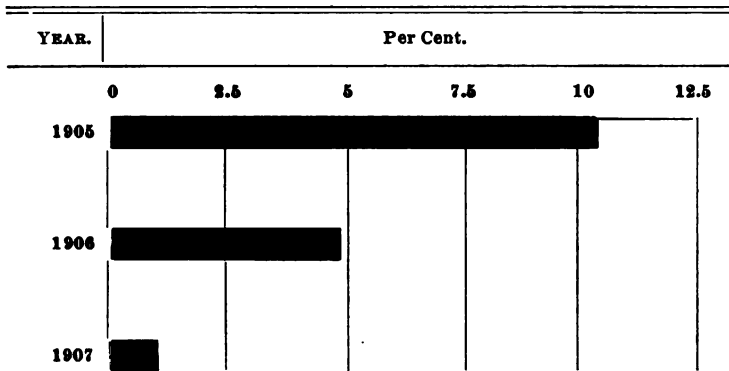
The supply of the past year has been unusual in its comparative freedom from pus and streptococci organisms, and while it is probable that the percentage of contaminated samples is below that of the average year, the continuous decrease in amount of this infected milk during the period in which these examinations have been made (1905, 1906 and 1907) is worthy of note. This condition followed the policy of excluding infected samples which has been in vogue during the above years. Of 4,609 samples examined during the year, only 52, or 1.1 per cent., showed infection. The results by months are indicated in Table VI.

Table VI.

MONTH.	Total samples examined.	Number containing pus.	Number containing pus and streptococci.	Number containing streptococci.	Per cent. of milk infected.
February, 1907.....	197	.....	.....	7	3.5
March.....	479	.....	1	7	1.7
April.....	471	3	.....	2	1.1
May.....	465	.....	.....	.....	.....
June.....	484	2	.....	6	1.7
July.....	413	1	.....	1	0.5
August.....	322	.....	.....	1	0.3
September.....	344	.....	.....	.....	.....
October.....	418	3	.....	3	1.4
November.....	236	2	.....	1	1.3
December.....	275	3	.....	2	1.8
January, 1908.....	505	2	.....	5	1.4
Total.....	4,609	16	1	35	.....

The comparative percentage of milk thus infected for the years 1905, 1906 and 1907 is shown in the diagram which follows. In 1905, 5,559 samples were examined, and 583, or 10.48 per cent., were contaminated. During 1906, of 5,007 specimens, 246, or 4.9 per cent., were reported for

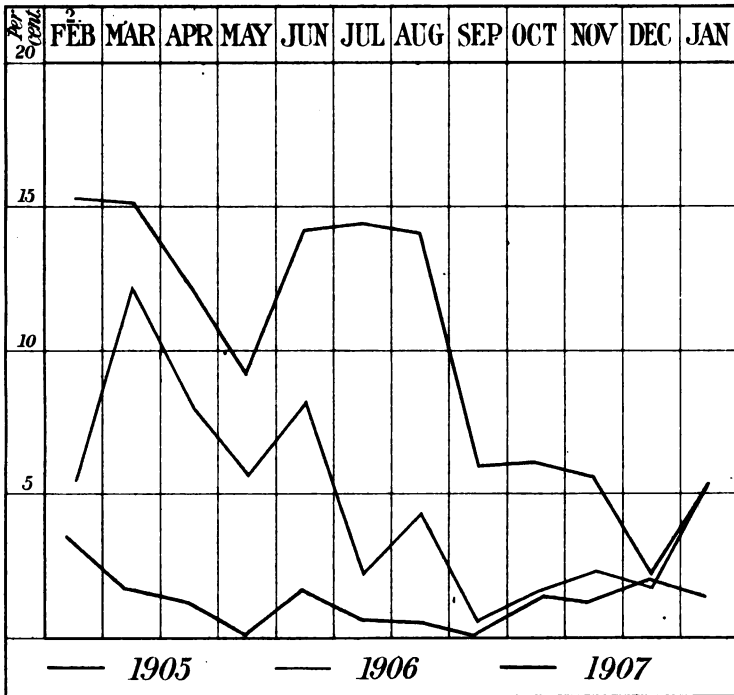
their pus, pus and streptococci, or streptococci content. The figures for 1907 appear above.



No doubt the attitude of those contracting firms, earnestly engaged in detecting and eliminating infected milk, has been a significant factor in this reduction. These concerns, upon ascertaining, by examinations in their own laboratories, that there is evidence of infected milk at the dairy, insist upon its being kept from the supply sent to this city. The contractors also aid producers in ascertaining what animals are responsible for the unsound milk.

An encouraging indication is that there appears to be less opposition at present to the exclusion of infected milk than has been evidenced hitherto over this prohibiting mandate. Even the producers are more willing to render aid in placing the blame upon the animals at fault. What is desired, however, is that dairymen exercise more care in observing the condition of their stock, and keep from the marketable milk the product of unhealthy cows, and of cows just prior to or subsequent to the calving period. Such a course would be preferable to that of including milk from such animals in that of the daily supply and trust to its escaping detection by milkman or consumer. Apparent abnormality in cows, such as certain forms of udder trouble, afford ample warning to the observant dairyman that the milk is likely to be unwholesome, and that in all fairness to purchasers and consumers it should not be offered for sale. While present methods afford a means of detecting these infected milks, the producers should not await the result of such examinations, but should take the initiative in withholding milk from all suspected animals. It is nothing short of criminal for producers to permit these abnormal milks to be used by the public, and especially is this so where the unhealthy

CHART NO. 2



1. See Chart No. 1 for percentage of infected milk for 1905, 1906 and 1907 from Contractors only.
2. The official year begins February 1.

condition of the animals is obvious. Dependence should not be placed wholly upon the authorities to guard the interest of the consumer in these matters. It is to the advantage of the producer to render all possible assistance, even if it entails a temporary pecuniary loss from throwing away a small amount of milk. In the end it means a greater market for his product, for public confidence in a milk supply means a demand for increased quantities of this fluid. While the greatest responsibility in this matter of unwholesome milk rests with the farmer, for he is the one constantly at the producing end, contractor, milkman, and all others having to do with providing public milk supplies, should render all possible assistance in protecting consumers from the milk of unhealthy animals. This is demanded by both law and decency.

The comparative percentage of infected milk for the years 1905, 1906 and 1907 is shown by Chart II. In May and September none of this objectionable milk was found. December was the only month of the year in which no improvement was shown over 1906.

That the amount of this infected milk might be materially decreased is fully evidenced by the results of investigating the finding of pus or streptococci or pus and streptococci in milk samples collected in this city during the years 1905, 1906 and 1907. These reports followed the sending of warning notices to dealers concerning the quality of the milk. Where the milk was collected from contractors these notices were sent to the latter and subsequently forwarded to the producers. The data obtained in endeavoring to account for these abnormal milks was procured for the most part through the assistance of the contractor. Experience has demonstrated, however, that it is impossible to obtain the facts in each instance without personal investigation, and for several reasons that course has been impossible. The list which appears below offers ample evidence, however, that much of the infected milk of the last year might have been excluded by dairymen who were both observant and considerate of the public welfare. In some instances negligence was apparent, but in others positive disregard of the consumers' interests was manifest. To those who aided in procuring the information much credit is due. The results for 1905 and 1906 have been previously published; those for 1907 follow:

1. Drying off three cows; they were being milked only once a day.

2. One cow had occasionally given bloody milk, and it was thought that some of this milk became mixed with the supply sent to market. By an examination of the remaining cows in this herd it was found that two of the animals had swollen throat glands; another had a bunch upon the udder, and the respiration of four cows was abnormal. The product of five cows was ordered excluded from the milk sent to market.

3. One cow nearly dry. Other cows being fattened and giving only two to three quarts of milk daily.

4. Cow reported as gargety. It was subsequently ascertained that this cow was a poor milker, "not giving milk freely." To obviate the difficulty, a spring lance was inserted in the cow's teats. The lance was then opened and drawn through the teat for the purpose of removing any obstruction. After this operation blood flowed from the teats for several days. Later the milk was supplied to consumers and an examination disclosed its abnormality.

5. Gargety cow.

6. Cow with inflamed udder.

7. Two cows nearly dry.

8. One cow with a swollen udder and with respiration slightly above normal.

9. One cow with a weak quarter; another cow was found to have a "fallen hip."

10. Gargety cow.

11. Cow with caked udder.

12. The milk from seven cows about to calve was being sent to market.

13. One cow with a "puff boil" and swollen udder.

14. Two cows of a herd of fifteen animals were giving milk containing much pus. The producer was told to keep the milk from these animals out of the supply. He refused to comply with this requirement; stopped sending his milk to this city, and immediately began selling it in a city in an adjoining State. Evidence as to the condition of the cows was unobtainable, but it was learned that the cow barn was very dirty and in need of thorough cleaning, and that horses were kept in the barn with the cows. There was an abundance of ice on hand, but it was not being used, and the milk was improperly cooled. The Inspector of Milk of the city to which the milk was being shipped was notified of the existing state of affairs, and immediate action was promised.

EFFORTS OF DEALERS TO IMPROVE MILK SUPPLIES.

During the year the various contracting firms made 29,208 bacteriologic examinations of milk in the endeavor to ascertain the quality of their supplies. Of this number, 928, or 3.17 per cent., were classified as containing pus or streptococci. Where the milk was found to have a high bacterial

content notices stating that fact were sent to producers, and the latter were also notified of the necessity of having their milk comply with the requirements of the Board of Health. One concern sends notices to farmers where the number of bacteria reach 250,000 per cubic centimeter, and all milk found by this firm to have above 100,000 bacteria per cubic centimeter is pasteurized and used for cream and butter. In instances where pus and streptococci were present in milk, the progressive concerns procure samples from the individual cows in each herd, and in this manner locate the cause of the trouble. The milk from the cows at fault is withheld until such time as the milk appears normal. One firm endeavors to learn the condition of the cattle by means of inquiry blanks, and an inspector also makes examinations of herds from which abnormal milk is procured. Two of the small companies employ veterinarians to examine faulty herds. Other dealers, on finding this abnormal milk, notify their producers to stop sending further supplies.

All of the contracting firms agree that the bacteriologic work of the last three years in connection with the milk supply has resulted in a marked improvement. One firm states that the amount of sour milk has been reduced 70 per cent. Another firm says that the work of bettering the condition of milk has brought a reduction of 17 per cent. in dairies with milk containing over 500,000 bacteria per cubic centimeter; a reduction of 12 per cent. in dairies with milk having temperatures above 50 degrees Fahrenheit; and a reduction of 12 per cent. in dairies with milk indicating pus. These figures are significant, and demonstrate possibilities where the work of improvement is judiciously planned and persistently and intelligently executed.

The last year has witnessed a greater effort on the part of contractors to better conditions at the place of production than has been made hitherto. The dairies are visited by inspectors who endeavor to point out undesirable conditions, and to educate the farmer to the necessity of more care in milk production. This work is carried on persistently by some firms and by others spasmodically. In some instances members of these concerns visit their dairies. Two firms have commenced using score-cards. Where the milk is persistently faulty, producers are notified to stop sending the milk. This course is also followed by other dealers where designated improvements are not made. Meetings for discussions with producers have been held, and literature upon the clean and cold milk subject has been freely employed. One concern reports but few instances where producers were

not supplied with ice. This firm also finds much improvement in the health and cleanliness of the cows, also that there has been a pronounced betterment in the barns from the standpoint of cleanliness and light. The employees of this concern are subjected to examination by a physician, and a system is in force for reporting any symptom of a contagious disease.

Two firms have greatly improved their transportation facilities by the introduction of refrigerator cars. By their use milk can be transported in much better condition than in the old style of car.

The necessity for care in the production and handling of milk, while of greatest importance from the influence upon the health of human beings, is not insignificant from the standpoint of waste of food or monetary loss. During 1907 fully 300,000 quarts of milk, nearly a day's supply, arrived in this city in such condition from sourness or other causes as to be unsalable. Of course this was not a total loss, as the cream could be made into butter. Market milk cannot be so utilized economically, however, and the shrinkage in value with the above quantity of milk, when converted into butter, undoubtedly amounted to nearly \$7,000, a loss which might have been prevented by caring for the milk properly.

LOW TEMPERATURE AN IMPORTANT FACTOR.

Low temperature will always be a necessary feature in the maintenance of good milk supplies, but some producers remain indifferent to this fact, and give very little, if any, attention to refrigeration. No dairy can be considered properly equipped without an abundant supply of ice, and with an owner possessing the required temperament and knowledge to properly cool this important product. Despite this fact, there are milk producers in New England who make no pretence of using or storing ice for this purpose, and there are other farmers who employ it so sparingly, or with such indifference, as to accomplish little good. There can be no excuse for New England farmers not having sufficient ice to cool their milk during all high temperature periods throughout the year. There is also evidence of neglect upon the part of many producers who refrigerate their milk during the summer to properly protect their product during the high temperature periods of the fall, winter and summer. The cooling of milk should be regulated by necessity and not by seasons. It is of the utmost im-

portance that milk be chilled as rapidly as possible, and that a low temperature be constantly maintained. This is a responsibility which farmers owe to humanity; furthermore, cold milk is advantageous from the pecuniary standpoint, for with low temperatures the amount of sour milk is lessened and the loss from this source is correspondingly decreased. While the maintenance of a low temperature is important during the time the milk is being transported upon cars, such cooling will not atone for the neglect of the producer. The latter should also use every precaution to protect the milk from the influence of the sun while it is being transported from the dairy to the cars. A covering for the cans will assist in maintaining a low temperature. The time is approaching when dealers will be compelled to refuse milk which has a temperature above 50 degrees Fahrenheit.

It is a fact that more attention is now given to the icing of milk than in previous years. This is due to the agitation of this subject and the increased knowledge of the influence of low temperature in keeping milk sweet. The progress of this cold milk idea has not been as widespread as desired, and there is necessity for further development in this direction. With the maintenance of the proper cleanliness and a low temperature at the dairy, the quality of the milk supply would be materially improved. Good dairying is essential to desirable milk, and no amount of ice or precaution on the part of the milkman will make amends for the neglect of the producer. On the other hand, commendable milk supplies may be readily spoiled by careless or slovenly methods of the dealer. It is essential then that all of those engaged in supplying the public with milk exercise great care in protecting this fluid from all detrimental influences. Milkmen realize the importance of ice, and many in this city, and at a considerable expense, employ it in large amounts in cooling their daily supplies. More care has been used by wagon dealers in the last year to have milk kept cold while it is being held for delivery than in any previous period. Many shops also use large quantities of ice in keeping their milk cold. The dealers who use the least pains in refrigerating milk are the storekeepers who sell milk in limited quantities. Some of these latter make no pretence of cooling milk until compelled to do so, while others are so sparing of ice that little benefit is derived. Only generous quantities of ice will accomplish the object desired; this applies to householders as well as to producers and dealers. During the warm periods of the year many temperature tests were

made. Some temperatures were taken in the country, others as the milk arrived on trains in this city, and many as the milk was being delivered to consumers by wagons or was offered for sale in shops. Warnings were sent for the first violation of the temperature regulation, and in all 216 were issued during the year; 92 of these were forwarded to contractors and represented milk of high temperature just as it arrived from the country. These latter warnings were sent by the contractor to the country. Where warnings proved unavailing, prosecutions were instituted, and in all 20 cases were brought. Fines varying from \$10 to \$15 were imposed.

CREAM.

After the enactment of the law last year, which made it illegal to sell cream having less than 15 per cent. of milk fat, it was found that very few of the dealers were aware of the adoption of this standard. To acquaint them with the requirements of the measure several thousand copies of the law in circular form were distributed. These notices also called attention to the regulations of the Board of Health concerning the standards for bacteria and temperature. The issuing of this circular resulted in an immediate improvement of the low grade creams, and very few samples are now found which do not have the required per cent. of fat. A marked change for the better was also made in the mode of handling cream after its arrival in this city.

The amount of cream sold in the city yearly is very large, and an increased quantity is annually required to supply the demands of the trade. By comparison with ten years ago, the business has developed tremendously in volume, and there were never as many dealers handling cream exclusively as at the present time. In 1907, 791,244 gallons of light cream, containing 17 per cent. to 20 per cent. of fat, and 1,191,492 gallons of heavy cream, containing 35 per cent. to 44 per cent. of fat, were handled by local dealers. Of these amounts 769,438 gallons of the light cream and 489,450 gallons of the heavy cream were probably consumed in this city. These quantities would allow over one gallon of thin cream and over three quarts of heavy cream to each inhabitant during the year.

An attempt was made to ascertain the amount of cream sold in 1902 for comparison with that of last year, and although complete data was unobtainable for 1902, the volume of cream for that year approximated 995,496 gallons of thin cream and 220,900 gallons of heavy cream. The proportion

of this cream consumed in this city is unknown. These figures denote a lessened demand for thin cream and a very marked increase in the amount of heavy cream required by consumers. Probably economic reasons have much to do with this change, for concentrated cream means decreased bulk and a saving in transportation charges.

A large proportion of Boston's cream supply comes from Maine, New Hampshire and Vermont, but some comes from New York and Massachusetts. Creameries are scattered over the above States, and at these establishments the cream is separated from milk or from thin cream purchased from farmers. The milk, or the thin cream, is taken to the creameries by producers or by collectors employed for this purpose. Where the farms are remote from the creameries the thin cream and collector system is employed to a large extent. Where milk is delivered to creameries by producers, the latter usually take back the skimmed milk for use upon the farm. Very little precaution is observed while transporting the milk or thin cream to the creameries for protection against atmospheric changes. A few concerns, however, make use of ice and heavy blankets in an attempt to maintain a low temperature. The States with number of creameries supplying Boston dealers follow:

Vermont	36
Maine	23
New Hampshire	12
New York	9
Massachusetts	4
<hr/>	
Total	84

At these creameries the milk or cream is first heated and then passed through separators to remove the cream from the milk and to further concentrate the thin cream. The heat employed varies from 155 to 180 degrees Fahrenheit, but most of the concerns heat from 160 to 165 degrees Fahrenheit. At many of the creameries the heating is only momentary ("continuous"), but at others the heat is maintained for longer periods, the time varying from five minutes to one hour. After heating much of the cream is almost immediately cooled below 50 degrees Fahrenheit, usually to a temperature of from 40 to 45 degrees. At a few creameries the cooling is done in cans immersed in ice water, and a longer period, usually thirty minutes, is required to bring the product to a low temperature. Some of the cream is shipped, packed in ice, in refrigerator cars, but large quantities are trans-

ported by express either in cans boxed and packed in ice or in jacketed cans. The cream arrives in cans of various sizes, the 40-quart can being used to the largest extent. Cans holding 8½, 24 and 41 quarts, respectively, are also employed. Cream is delivered to consumers in jars varying in capacity from one-eighth of a quart to a quart, and in cans holding from 1 quart up to 40 quarts.

Cream is a commodity which is not delivered to consumer fresh. The freshest milk which arrives at any of the above creameries is from 3 to 15 hours old, and the cream from these creameries upon arrival in Boston is from 24 to 48 hours old, and when delivered to consumers is from 36 to 72 hours old. At other creameries the milk upon arrival in summer is from 48 to 72 hours (in winter, 96 hours) old; when this summer cream reaches this city it is from 60 to 84 hours old, and when delivered to consumers 84 to 108 hours old. The above winter cream may be from 120 to 144 hours old, and even older, when delivered to customers.

The inspection given to farms where milk is produced for conversion into cream is inadequate. Only a few of the large firms make any pretence at supervision, and some of these concerns even assert that no attempt is made to control the conditions under which milk is raised for cream purposes. One concern which operates largely with Massachusetts milk guards the farm production by means of a veterinarian and bacteriologist, but where the farms are outside of this State no effort is made by this firm to govern production conditions. A few dealers attempt regulation over farms by returning milk when it is unsatisfactory, or employ a system of rebates with faulty milk. Some of the small concerns frankly assert that they have no control over the dairies or acquaintance with production conditions; in fact, many of these latter firms act simply as middlemen, purchasing their cream from creameries and possessing no knowledge of its preparation, much less of the farm surroundings. One dealer stated that he has never visited the creameries from which he purchases supplies, and that if he attempted to interfere with the creamery or production part of the business, he would be told to procure his supplies elsewhere. The principal reason why so little attention is given to sanitary conditions at the farm and to the health of the cows is that the cream is heated, *i.e.*, commercial or true pasteurization is relied upon to offset farm deficiencies.

Three firms ascertain the quality of their cream by means of bacteriologic tests, and the same number of concerns make examinations for the presence of dirt. Other than the work

of the above firms, and the tests for the amount of fat, there is very little examination of cream by dealers. Most of the sour cream, that which results from surplus stock or is returned by customers, is made into butter; a small portion, however, is sold to the Jewish trade.

CHEESE.

During 1906 and 1907 a number of examinations of cheese were made for the purpose of establishing the relation of the fat content to the amount of solid matter. These samples were procured from various sections of the city and well represent the quality ordinarily sold to purchasers. The results, which indicate a preponderance of cheese of the higher grades upon this market, follow:

Cheese.

NUMBER.	Kind.	Price per Pound.	Per cent. of Fat.	Per cent. of Solids.
1.....	Curd.....	\$0 12	2.10	37.60
2.....	Sour Milk.....	06	3.00	22.75
3.....	Parmesan.....	pkg. 10	3.60	72.78
4.....	Curd.....	05	4.50	42.50
5.....	".....	10	4.50	43.25
6.....	American.....	10	9.00	51.60
7.....	".....	12	11.70	59.20
8.....	Cream.....	20	13.50	49.07
9.....	Neufchatel.....	pkg. 05	18.75	38.15
10.....	Cream.....	16	19.50	44.65
11.....	American.....	16	22.50	70.50
12.....	".....	18	23.25	61.95
13.....	".....	19	24.00	79.25
14.....	Neufchatel.....	pkg. 05	25.50	44.60
15.....	Cream.....	pkg. 05	28.50	60.50
16.....	American.....	18	30.00	66.30
17.....	".....	20	30.00	72.10
18.....	".....	23	31.50	61.65
19.....	".....	19	31.50	63.90
20.....	".....	16	33.00	62.30
21.....	".....	14	33.00	66.40
22.....	".....	17	33.00	67.40
23.....	Swiss.....	.....	33.00	68.60
24.....	American.....	18	33.00	70.95

Cheese. — Concluded.

NUMBER.	Kind.	Price per Pound.	Per cent. of Fat.	Per cent. of Solids.
25.....	".....	18	33.75	75.10
26.....	".....	17	34.50	63.25
27.....	".....	16	34.50	64.60
28.....	".....	14	34.50	66.40
29.....	".....	20	34.50	70.80
30.....	".....	16	34.50	73.00
31.....	".....	18	34.50	74.30
32.....	".....	16	34.50	77.85
33.....	".....	20	36.00	62.00
34.....	".....	16	36.00	68.00
35.....	".....	17	36.00	69.35
36.....	".....	18	36.00	69.65
37.....	".....	12	36.00	72.50
38.....	".....	20	36.00	73.10
39.....	".....	16	36.00	74.55
40.....	".....	16	36.00	76.20
41.....	".....	16	36.00	79.00
42.....	".....	19	36.00	72.75
43.....	".....	14	37.00	70.10
44.....	".....	20	37.00	70.45
45.....	".....	20	37.50	72.90
46.....	".....	18	38.25	76.00
47.....	".....		39.00	86.80
48.....	".....	18	39.00	75.70
49.....	".....	18	39.00	76.50
50.....	".....	20	40.00	75.02
51.....	Cream.....	pkg. 10	40.50	52.85
52.....	American.....	16	42.00	83.70
53.....	Cream.....	pkg. 09	44.60	63.00

All of the above samples were found free from foreign fats, and the prices bore no relation to the fat content. Thus of two specimens from the same store: No. 16 contained 30 per cent. of fat and cost 18 cents per pound, while No. 52, with 42 per cent. of fat, cost only 16 cents per pound. Nos. 5 and 6 each cost 10 cents a pound, yet one (No. 6) yielded 9 per cent. of fat and was superior to the other (No. 5) in every respect; the latter contained only 4.5 per cent. of fat. Nos. 1 and 4 show wide differences in both cost and fat content;

No. 1 cost 12 cents per pound and contained 2.10 per cent. of fat; while No. 4, costing only 5 cents per pound, contained 4.5 per cent. of fat. Flavor is an important element in determining the price of cheese, but it is not the sole factor. If the value is based exclusively upon the amount of fat, however, the above figures show that the fat in skimmed milk cheese is much more expensive than the fat in the richer varieties. The food value of cheese, however, cannot be determined solely by the amount of fat.

Two of the specimens of cream cheese were fraudulent, namely, Nos. 8 and 10; they contain an excess of moisture and were evidently made from partially skimmed milk. No. 15 is of better quality, but does not compare favorably from the standpoint of richness with Nos. 51 and 53. Considerable variance is also to be noted in the percentage of fat in the samples of Neufchatel cheese, Nos. 9 and 14.

A law defining the amount of fat which should be in whole cheese, *i.e.*, that made from unskimmed milk, and requiring skimmed milk cheese to be marked so as to indicate its character, would be advantageous. Skimmed milk cheese is a wholesome and valuable food, but it should be sold for what it is and without deception.

BUTTER.

Although there was not much variance in the number of cases for violation of the renovated butter law, there can be little doubt that the number of dealers in this commodity is gradually decreasing. There are two reasons for the lessening of traffic in this grade of butter, one being the stringency of the legal requirements concerning marking, and the other is the dissatisfaction of customers with the product, rapid deterioration being likely to ensue when it is removed from the refrigerator of the dealer and subsequently kept under ordinary household conditions. Retail dealers in this butter need to exercise great care in plainly marking each package before delivery to purchasers. A supply of marked papers should be kept and employees instructed and made to use them. The retailer who attempts to deal in this butter and leaves the marking of the package until just prior to delivery to the customer is tempting fate, and is likely to be found violating the law, either through intent or forgetfulness of himself or of his agents.

An effort is being made at the present time to have the law requiring the use of the word "renovated" changed so that it may be optional with dealers to use either the designation

"process" or "renovated in" marking packages of this butter. The movement is instigated by interested parties, namely, manufacturers of this product, who believe that the word "process" will be less objectionable to consumers than the present characterization. The bill which has been introduced into the Legislature in the attempt to legalize this change deserves defeat. The word "process" utterly fails to describe this product and would be utilized to defraud and deceive consumers. "Renovated" would be a mild designation if users had the opportunity to observe and smell some of the original stock from which the rejuvenated article is prepared.

There is need, however, for a law in this State limiting the amount of water in butter. Such enactments have been made by other New England States, and Massachusetts should have similar protection from fraudulent goods. During the summer it was ascertained that butter was being remade by one concern in this city in such a manner as to cause the finished product to contain an abnormal amount of water. By co-operation with the Internal Revenue Department, the firm was compelled to abandon the business in this city. The concern then transferred this part of its business to a nearby city, from which a later change was made to a city west of Boston. Meanwhile Massachusetts has no legislation which will prevent the sale of this watered butter. The results from examinations of these watered goods are shown in the following table, together with the prices (the specimens were purchased during the summer) of the samples:

SAMPLE NUMBER.	Price per Pound.	Per cent. of Water.
1.....	\$0 32	20.66
2.....	36	24.44
3.....	32	25.38
4.....	32	26.38
5.....	32	27.73
6.....	28	34.75
7.....	28	36.08

Average pound price, \$0.31.

Average per cent. of water, 27.91.

In view of the fact that butter of good quality rarely contains more than fourteen per cent. of water, and that the

average amount of water is less than this figure, specimens with from 20.66 per cent. to 36.08 per cent. are gross frauds, and the subject requires legislative action in order to give the public adequate protection. The reduced amount of fat in watered butter makes the cost to the purchaser excessive.

Although many tests were made for boron compounds in butter and oleomargarine, in no instance was evidence of these preservatives discovered.

OLEOMARGARINE.

The sale of this substance is rapidly increasing. This is largely due to the attitude of the courts in interpreting the color law of this State. Manufacturers have been quick to take advantage of the court's decision whereby "if the color which makes oleomargarine look like butter is incident to the use of materials needful in the production of oleomargarine, it is not coloration from an ingredient put in to cause it to look like butter. In such case it is the oleomargarine itself which resembles butter, and it is not caused to look like butter by a coloration or ingredient added for that purpose."

Makers of oleomargarine under this ruling have shown much cleverness. They now select materials yielding a finished product which from the standpoint of appearance cannot be distinguished from yellow butter, and in which, so far as known, no trace of an identifiable color has yet been detected. This yellow oleomargarine is more pleasing to users, hence its increased employment. The demand has grown to such an extent that there are now thirty-three dealers registered for the sale of oleomargarine, an increase of ten dealers over last year, and eighteen more dealers than were registered for the sale of oleomargarine in 1905.

Oleomargarine of the yellow type is viewed with favor by restaurant and boarding-house keepers. This is demonstrated by the increased number of cases against these establishments where oleomargarine was being served without notifying guests. During the year twenty-six cases were entered for serving oleomargarine in the above manner as against six cases in 1906.

VINEGAR.

The inspection of vinegar has resulted in disclosing somewhat more than the usual amount of spurious products. During the year, however, there were indications that some

manufacturers were more actively interested than hitherto in placing pure goods upon the market. Many New Englanders from custom use for vinegar (or intend to) the product made from cider. This custom is not based on a sound foundation, for the value of vinegar is in the acetic acid, which is the acid present in the various types of vinegar. Thus cider vinegar has no advantages over the other forms, and as some of the latter are much cheaper, from the cost standpoint consumers are at a decided disadvantage in purchasing cider vinegar. There is no substantial reason for encouraging the sale of cider vinegar; in fact, purchasers are less likely to be deceived or imposed upon when buying other varieties. The comparative high cost of cider vinegar is founded upon two reasons, one being the demand and the other scarcity of this product. An expert has recently stated that the demand for cider vinegar exceeded the supply fifty per cent., but whatever the figure there is no doubt that the demand for cider vinegar is largely in excess of production. With this condition of affairs, there is great temptation to supply the difference between production and the amount required by the trade. In fact, this adulteration or extending of pure cider vinegar is practised by many dealers, and the manipulations in most instances are cleverly devised. The methods are planned especially to produce a product which will escape detection by the chemist and meet the approval of users. In the latter respect there is little trouble, and not infrequently the analyst is deceived. Of course this adulteration or extension of cider vinegar is not done solely to supply users with cider vinegar. It yields a substantial profit to the manipulator and at the same time gives him an opportunity to undersell his competitors who are handling the pure article. A typical method of extending cider vinegar is to prepare a compound composed of white or spirit vinegar, boiled cider or apple jelly and acetate of potassium. The cost of this spurious mixture is about four cents per gallon. To this is added an equal quantity of cider vinegar, costing twelve cents per gallon, thus rendering detection more difficult. The cost of the two gallons of finished product would be sixteen cents, or for one gallon eight cents. Thus there is a difference of approximately four cents per gallon between the cost of the finished compound and the pure product—not an insignificant profit. There are other methods of extending cider, but they are crude by comparison with the above scheme. The boiled cider or apple jelly which is frequently employed in cider vinegar adulteration is dealt in by the carload. The product known as boiled cider is

usually true to its name and made by evaporation of cider, but the variety known as apple jelly may be made either from apple pumice (the residue which remains after apples are pressed in making cider), by cooking it with water and subsequently boiling down the aqueous solution, or by boiling apple cores and skins with water and then concentrating the liquid by heat. When the jelly is prepared from cores and skins which have been bleached by sulphur dioxide, the finished product is of a lighter color than when prepared from unbleached cores and skins. There is such demand for these cores and skins that the "apple waste," as it is known, is an article of commerce. A compound is also extensively made from apple waste by first thoroughly steaming it and finally pressing out the liquid portion. This is known to the trade as "apple juice," and is sufficiently dense to be employed in building up "cider vinegar solids" without concentration. This liquid, by evaporation, could be converted to apple jelly. Supply houses exist for furnishing vinegar manufacturers with wares necessary to the preparation of fictitious vinegar. The adulteration is not confined to cider vinegar; any vinegar which has color is never so cheap as to escape the attention of the expert mixer, the idea being to lessen the cost of the product and secure the market from some competitor. Thus molasses or syrup vinegar, which should be made by fermentation, has been imitated by the simple addition of molasses to white wine vinegar. There will always be petty fraud in the retail sale of molasses, syrup and like vinegars for cider vinegar. Such sales are oftentimes made by retailers to regular customers who are known, but when a stranger or person who may be suspected of being a collector of samples attempts to buy cider vinegar, they are met with the statement that there is no cider vinegar in stock, or the vinegar is sold as molasses, or standard, or by some other fanciful designation. Thirty-three vinegar cases were brought to the attention of the courts and all of the defendants were found guilty.

COURT CASES.

A summary of the year's prosecutions follows:

For sale, or possession, or custody with intent to sell of milk not of good standard quality	220
For possession with intent to sell of milk containing added water	10
<i>Carried forward</i>	<hr/> 230

<i>Brought forward</i>	230
For sale of cream containing less than 15 per cent. milk fat	2
For possession or custody with intent to sell of watered skimmed milk	1
For milk having a temperature higher than fifty degrees Fahrenheit	20
For sale of milk in vessels not bearing dealer's name, and neglect to transfer to clean vessels	2
For sale of adulterated cider vinegar	5
" " vinegar	9
" vinegar not made from cider as cider vinegar,	16
" " colored with caramel	3
" renovated butter not properly marked	39
For possession of renovated butter in unmarked tub	1
For sale of oleomargarine as butter	4
" " unmarked	3
" " not being licensed	7
" " in imitation of yellow butter,	4
For furnishing oleomargarine in a restaurant	26
	<hr/>
	372
	<hr/>

The results of prosecutions were as follows:

Number of warrants returned without service	5
" cases in which defendants ran away	1
" " on file	13
" " dismissed on motion of complainant,	9
" " nol pros'd	6
" acquittals	9
" convictions	329
	<hr/>
	372
	<hr/>

INCOME.

The amount paid in fines was	\$5,037 00
Receipts from license fees	719 00
	<hr/>
Total	\$5,756 00
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Respectfully submitted,

JAMES O. JORDAN,
Inspector.

REPORT OF INSPECTOR OF ANIMALS.

BOSTON, January 1, 1908.

To the Board of Health:

GENTLEMEN,—I have the honor to submit the following report of the contagious diseases among animals, the inspection of animals kept for the production of milk within the city, the inspection of animals and dressed meat at the Brighton Abattoir, and the inspection of provisions, for the year ending December 31, 1907.

ANIMALS KILLED AT ABATTOIR.

Cattle	40,664
Calves	10,742
Sheep	1,186
Swine	32,967
Total	<u>85,559</u>

Table No. I.

ANIMALS CONDEMNED.

	Number.	Weight. (Pounds.)
Cows.....	266	95,242
Steers.....		
Bull.....	1	240
Calf.....	1	32
Sheep.....		
Swine.....	19	2,263
Parts of 185 swine.....		2,845
Parts of animals, including 1,864 livers.....		21,868
Total.....	287	122,490

"Parts of animals," in the above table, refer to animals where only a part of the same was condemned, the unmarketable portion being confined to the parts about the local lesion.

Table No. 2.

DISEASES FOUND AMONG ANIMALS AFTER HAVING BEEN KILLED AND DRESSED
AT THE ABATTOIR, NECESSITATING THE CONDEMNING OF THE CARCASSES.

DISEASES.	Cattle.	Calves.	Sheep.	Swine.
Tuberculosis.....	257	.....	.....	12
Septicemia.....	7	.....	.....	2
Pneumonia.....	1	.....	.....	.....
Cholera.....	.....	.....	.....	4
Immatured.....	.....	1	.....	.....
Eczema.....	.....	.....	.....	1
Jaundice.....	1	.....	.....	.....
Injury.....	1	.....	.....	.....
Totals.....	287	1	.....	19

Table No. 3.

ANIMALS RECEIVED DEAD FROM THE STOCK-YARDS TO BE DRESSED FOR FOOD.

ANIMALS.	Number Received.	Number Condemned.	Weight.
Cows.....	121	25	9,319
Steers.....	.....	.....	.....
Bull.....	1	.....	.....
Totals.....	122	25	9,319

The above table refers to animals arriving at the different stock-yards which were unable to walk to the abattoir because of injury during transportation, or from what was supposed to be a slight illness; these were shot at the stock-yards and carted to the abattoir in the ambulance.

Of the above 122 animals 84 were found to be slightly injured, 10 had fracture of a leg, 1 was pregnant, 1 had laminitis, 1 was wild, 6 had septicemia, 1 had pneumonia, 1 had jaundice, 1 was badly injured and 16 had tuberculosis, the last 25 being condemned.

ACTINOMYCOSIS.

There were found at the abattoir during the past year 31 cases of actinomyces, all of which showed only local lesions about the head, and in these cases the heads and tongues were condemned.

TUBERCULOSIS.

The following table shows the number of cases of tuberculosis in cattle killed at the abattoir:

Table No. 4.

CLASS OF ANIMALS.	Number Received.	Number Tubercular.
Cows from Eastern States.....	10,270	415
Bulls from Eastern States.....	917	1
Cows from Western States.....	22,385	86
Steers from Western States.....	7,092	2
Steers from Eastern States.....		
Swine.....	32,967	202
Total.....	73,631	706

Under the head of "Cows from Eastern States" is included animals from all of the New England States.

By comparing the above table with table under the head of "Diseases found among animals after having been killed," etc., it will be seen that only 269 of the 706 cases of tuberculosis were condemned. This means that 437 of these cases were slight and not condemnable under the act passed by the Legislature of 1898.

INSPECTION OF CATTLE.

The inspection of cattle kept for the production of milk within the city limits has been continued as heretofore. All cattle that have, upon physical examination, shown any symptoms of tuberculosis, have been subjected to the tuberculosis test. Twenty animals were found tuberculous, quarantined, and reported to the State Cattle Bureau as required by the Revised Laws. The barns occupied by these animals were disinfected by the Board of Health.

Five cases of actinomycosis of the udder were found. These cows were quarantined and reported to the State Cattle Bureau, and the sale of milk prohibited. By order of the State Cattle Bureau one of these cows was ordered killed and the remaining four were released.

GLANDERS.

There have been reported to the Board of Health by veterinarians during the past year 376 suspicious cases of glanders.

Of these 94 horses on examination were found to be affected with some non-contagious disease, and the remaining 282 with glanders. Ten of these cases upon inquiry were found to have been owned and stabled outside of Boston, or had been stabled in Boston for so short a time that no doubt existed but that the animals were infected with glanders before coming to Boston. The State Cattle Bureau was notified of such cases, that an investigation might be made by them.

In addition to the above cases of glanders reported to this office, the Board of Health, by examining all animals in stables where a case of glanders has occurred, and also in many other stables, found 17 cases of glanders, or five per cent. of the total number of cases, all of which would otherwise have remained in such stables, a constant danger to the other animals, for some time before being discovered by the owner. The following table shows the number of cases of glanders for each month during the past year:

Table No. 5.

MONTH.	Cases Reported.	Cases Found by Board of Health.	Cases Found which Belonged in some Other City.	Cases which upon Examination were Found not to be Glanders.	Actual Number of Cases of Glanders Found in City.	Number of Cases of Glanders which Belong in Boston.	Number of Stables in which Glanders was Found.
January.....	29	.....	1	4	25	24	18
February.....	15	1	.....	3	13	13	11
March.....	26	1	.....	6	21	21	18
April.....	29	2	.....	7	24	24	23
May.....	31	3	1	11	23	22	17
June.....	24	.....	2	6	18	16	18
July.....	24	1	.....	5	20	20	16
August.....	34	.....	1	10	24	23	10
September.....	37	3	3	9	31	28	17
October.....	50	2	1	14	38	37	32
November.....	36	4	.....	8	32	32	30
December.....	41	.....	1	11	30	29	30
Total.....	376	17	10	94	299	289	240

All stables in which glanders occurred during the past year have been disinfected.

RABIES.

During the year ending December 31, 1907, 162 animals, infected with rabies, or which had been exposed to another rabid animal, came under the observation of this department. Upon investigation 85 were found to be cases of rabies, the diagnosis of which was confirmed by either well-marked clinical symptoms, or by examination at the bacteriological laboratory. Thirty-four upon examination were found not to be rabid. Forty-six animals which had been exposed to rabid dogs were reported to the Board of Health, who ordered their quarantine until such times as all danger had passed.

The following table shows the result of all cases under observation:

	Total.	Positive.	Negative.	Killed by Owner.
Reported.....	116	82	34	.....
Quarantined.....	46	3	23	20
Total under observation.....	162	85	57	20

INSPECTION OF PROVISIONS.

The following articles of food, seized in markets and stores, have been condemned:

Beef, tainted	1,700 pounds
Veal, tainted	1,889 "
Veal, immatured	3,909 "
Veal, tuberculous	112 "
Mutton, tainted	740 "
Pork, tainted	107 "
Poultry, tainted	4,126 "
Bear, tainted	299 "
Rabbit, tainted	233 "
Pigeons	28 "
Cheese, decayed	771 "
Miscellaneous fish, decayed	3,017 "
Oysters, decayed	15 gallons
Miscellaneous fruits, decayed	116 bushels
Miscellaneous vegetables, decayed	259 "

Respectfully submitted,

ALEXANDER BURR,
Veterinary Medical Inspector.

REPORT OF THE PORT PHYSICIAN.

To the Board of Health:

GENTLEMEN,—I herewith submit the annual report of the Quarantine Department for the year ending February 1, 1908.

During the past year all vessels from foreign ports, with the exception of the British Maritime Provinces, have been inspected, and from June 1 to November 1 all vessels from ports south of Virginia have been inspected. Under a recent ruling of the Treasury Department all vessels from Porto Rican ports are classified with those coming from southern ports.

From February 1, 1907, to February 1, 1908, 834 vessels of all descriptions were inspected; 33 vessels disinfected.

Bills to the amount of \$4,830 were turned over to the City Collector.

There were admitted to the Quarantine Hospital 94 cases, classified as follows: scarlet fever, 39; measles, 15; chicken pox, 3; leprosy, 2; observation, 30; variola, 5.

The number of passengers inspected was 60,812; sailors, 57,309; cattlemen, 3,120.

Respectfully submitted,

PAUL CARSON,
Port Physician.

REPORT OF DERMATOLOGIST.

BOSTON, February 1, 1908.

To the Board of Health:

GENTLEMEN,—I beg leave to make report of the following cases which I have been requested by your honorable Board to see during the year ending January 1, 1908:

Acne	32
Alopecia Areata	3
Cerebro Spinal Meningitis	103
Chicken Pox	58
Dermatitis	15
Dermatitis Venenata	9
Dermatitis Herpetiformis	1
Eczema	152
Erythema Simplex	15
Erythema Multiforme	3
Favus	22
Herpes Simplex	12
Herpes Zoster	4
Ichtyosis	3
Impetigo Contagiosa	37
Leprosy	4
Lupus Erythematosus	1
Lupus Vulgaris	4
Measles	22
Pediculosis	30
Pemphigus	3
Prurigo	3
Psoriasis	7
Pellagra	1
Scabies	35
Scarlet Fever	26
Seborrhœa	13
Staphylococcia	30
Syphilis	8
Tinea Tricophytina	41
Tinea Versicolor	2
Urticaria	9
Vitiligo	1
Total	709

FRANCIS J. KEANY, M.D.,
Dermatologist.

REPORT OF SUPERINTENDENT OF PEDLERS.

CITY BUILDING, NORTH GROVE STREET,
BOSTON, February 1, 1908.

To the Board of Health :

GENTLEMEN,— I have the honor to submit the following report for the year ending January 31, 1908:

Pedlers were assigned numbers (chapter 47, section 86, Revised Ordinances) — in February, 384; March, 29; April, 61; May, 67; June, 89; July, 88; August, 39; September, 32; October, 42; November, 28; December, 30; and in January, 52.

Vehicles inspected and approved (chapter 47, section 88) in March, 354; April, 356; May, 373; June, 398; July, 370; August, 393; September, 389; October, 387; November, 398; December, 340; January, 352.

Licenses to remove from the city bones, grease, etc., were granted: In February, 72; May, 1; June, 1; August, 1; and January, 2, and of this number the renewals were: In March, 67; April, 64; May, 63; June, 65; July, 66; August, 66; September, 69; October, 64; November, 66; December, 66; and January, 64. Sixty-three (63) licenses were granted to remove manure, all of which expire April 30, 1908.

Vehicles and receptacles used by persons licensed by the Board of Health are kept clean and in good condition, except a few wagons used by contractors for removing manure.

Chapter 584, Acts of 1907, has simplified the method of regulating pedlers; there is now no conflict of authority; the Street Department has stopped granting permits to pedlers; the Police Commissioner may designate certain streets or sections of the city in which pedlers, who have complied with the laws and ordinances, may stop, or stand, for the purpose of selling merchandise; and for the proper supervision of pedlers the ordinances should be changed so that the Board of Health would have control of all persons selling articles enumerated in section 15, chapter 65, of Revised Laws.

During the year the city received for license fees from pedlers \$2,394, of which \$444 was for county licenses.

Numbers assigned to pedlers	941
Licenses to remove bones, etc.	77
Licenses to remove manure	63

Respectfully submitted,

JOHN McLOUGHLIN,
Superintendent of Pedlers.

